LIBRARY OF CONGRESS
COPYRIGHT
MAY 16 1887
3072
CITY OF WASHINGTON

PRICE 15 CENTS.

MAY 14, 1887.

THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. XXI. REGULAR EDITION NO. 594.

ARCHITECTVRE

ENGINEERING

DECORATION

CONSTRVCTION

TICKNOR & COMPANY

BOSTON, MASS.

CONTENTS.

Editorial Summary.
Ancient and Modern Light-houses.—XII.
On the Theory of the Abandonment of Ancient Lights.—II.
Joints in Woodwork.—III.
Varnishing Day at the Royal Academy.
Societies.
Books and Papers.
Communications.
Notes and Clippings.
Trade Surveys.

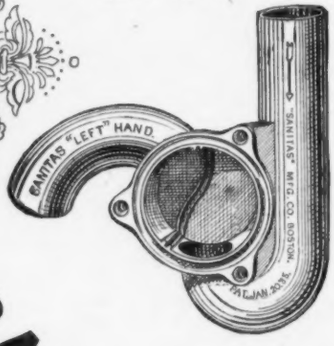
ILLUSTRATIONS.

Store of Messrs. J. H. Pray, Sons & Co., Boston, Mass.
(Gelatine Print issued only with Imperial Edition.)
Cumberland Nat'l Bank, Bridgeton, N. J.
St. George's Reef Light-house, near Crescent City, Cal
Competitive Design for the Kansas City Exchange, Kansas City, Mo.
Designs for a City House.
Spire of Church, Boston, Mass.
Tower of San Miguel, Saragossa, Sp.

THE SANITAS "RIGHT-HAND" TRAP.

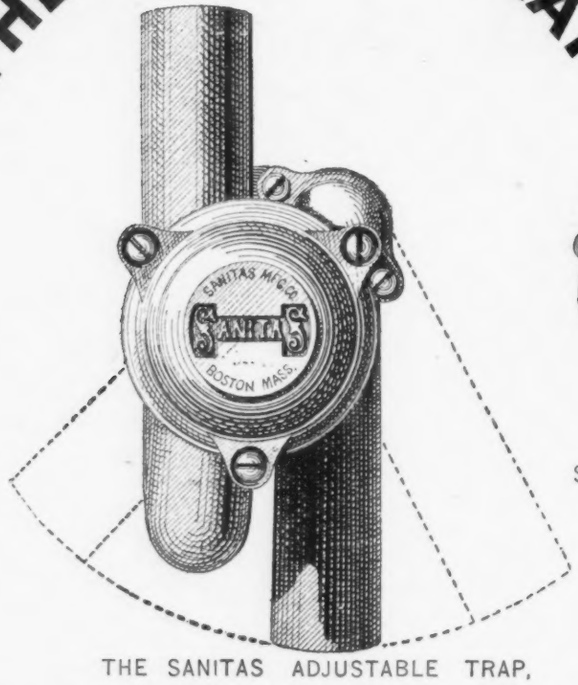
+ PLUMBING +
SANITAS
+ APPLIANCES +

THE SANITAS "LEFT-HAND" TRAP

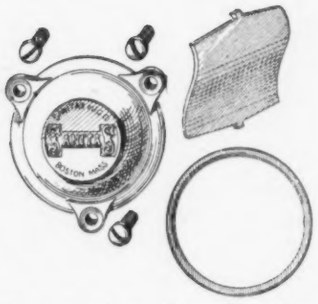


THE SANITAS TRAP.

The Sanitas Full S Brass Trap



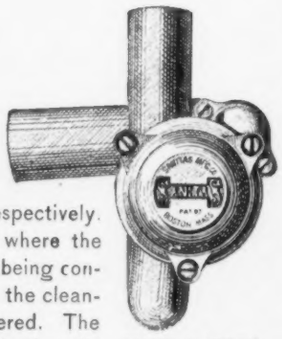
THE SANITAS ADJUSTABLE TRAP.



Sanitas Trap - Cup, Partition, and Washer.

RUNNING TRAP.

The Sanitas Trap is made in various forms to suit varying positions of the fixture, outlet and waste-pipes. The Sanitas "Right" and "Left-Hand" Traps are the forms which will be found most convenient when the waste-pipe must be carried laterally to the right or left respectively. The Sanitas adjustable or universal Trap is designed for use where the position of the waste-pipe is not known beforehand, the outlet arm being constructed with a novel swivel joint made tight in the same manner as the clean-out cap on the body, with an ordinary screw-driver, or it can be soldered. The Sanitas Traps are not only the easiest to set, but are the only perfectly reliable anti-siphon, self-cleaning. traps known.



HALF S TRAP.

This Trap, whether vented or unvented, is a perfectly safe barrier against Sewer-Gas.

THE "SANITAS" MANUFACTURING CO., 207 TREMONT ST., BOSTON, MASS.

AGENTS: For N. Y. City and vicinity, Miller & Coates, 279 Pearl St., N. Y. For New England, C. G. Cunningham, 207 Tremont St., Boston.

T. H. DUGGAN, 141 Dartmouth Street, BOSTON, MASS. TELEPHONE, 4165 } Will execute anywhere, in first-class manner, small or large contracts for **PLUMBING**

Su

An
Os
I
Jo
Th

Va
So
Bo
Co

No
Tr

W

we
liv
ar
du
th
of
fu
th
we
wi
th
of
so
tr
di
he
al
lo
th
he
al
be
gr
da
m
a
w
a
w
a
th
th
th
is
s
a
c
s
e

Y

g

THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XXI. Copyright, 1887, by TICKNOR & COMPANY, Boston, Mass. No. 594.

MAY 14, 1887.

Entered at the Post-Office at Boston as second-class matter.

CONTENTS

SUMMARY: —
The Proximity of Trees to Dwelling-houses. — The Way in which a Wisconsin Town avoids Paying its Debts. — Hydrogen Blasting-Cartridges. — Defective Drainage of the London Parliament-Houses. — Details of the proposed new System. — The Ives Process Prints. 229
ANCIENT AND MODERN LIGHT-HOUSES. — XII. 231
ON THE THEORY OF THE ABANDONMENT OF ANCIENT LIGHTS. — II. 232
JOINTS IN WOODWORK. — III. 234
THE ILLUSTRATIONS: —
Store of Messrs. J. H. Pray, Sons & Co., Boston, Mass. — Cumberland National Bank, Bridgeton, N. J. — St. George's Reef Light-house, near Crescent City, Cal. — Competitive Design for the Kansas City Exchange, Kansas City, Mo. — Designs for a City House. — Spire of the Park Street Church, Boston, Mass. — Tower of San Miguel, Saragossa, Spain. . 234
VARNISHING DAY AT THE ROYAL ACADEMY. 235
SOCIETIES. 235
BOOKS AND PAPERS. 236
COMMUNICATIONS: —
Rabbet or Rebate. — Economy in Domestic Cookery. — The Design for the Detroit Post-Office. — A Roof Truss. 238
NOTES AND CLIPPINGS. 240
TRADE SURVEYS. 240

WE suppose we should be considered Vandals if we ventured to say that most houses in the country had too many trees around them, but that is certainly our opinion; and when we hear people talk, as they often do, about a tree being "a living being to them," with other sentimental expressions, we are tolerably sure that the dwelling of these people is one productive of rheumatism, nervousness and catarrhs. The rule that we are inclined to favor is that the least allowable distance of any tree from a house should be twice its own height when full-grown. Even then the tree, if it stands to the southward of the house, will just cast a shadow on it at noon in winter, and we cannot see any sunshine excluded from a house in winter without regret. Mr. Charles Roberts has recently written for the London *Lancet* an article on "Trees from a Sanitary Point of View," which is commented upon by the *Builder*, in which some curious particulars are given in regard to the influence of trees upon neighboring dwellings. Mr. Roberts says that the distance of any tree from a house should not be less than the height of the tree, which we think is much too near; but he also says that trees, even at a considerable distance, materially lower the temperature of a house. This effect is partly due to the shadow, which prevents the walls and ground from being heated by the sun, but something is probably to be attributed also to the evaporation from the foliage. However that may be, a clearing surrounded by trees is usually three or four degrees colder than open ground beyond, and, of course, far more damp. In fact, many trees, when in full growth, draw so much moisture from the earth as to keep the ground about their roots almost in the condition of a wet sponge, while the obstruction which their branches and leaves present to the circulation of air greatly increases the dampness near them. We do not know whether any experiments with hygrometers in wooded districts, as compared with open country, have ever been described, but they would be of great value, as would also be an inquiry into the connection of moisture or dryness of the atmosphere with the development and propagation of diseases. Almost nothing is known on this subject, but all remember that unpleasant smells are carried much farther by a moist air than a dry one, and certain experiments seem to indicate that infectious particles retain their vitality longer in such an atmosphere, but no systematic investigation of the matter, so far as we know, has ever been made.

THE *Sanitary News* gives an account of the way in which a certain town in Wisconsin saves itself from the annoyance of having to pay its debts, which we commend to individuals in a similar condition of mind. It seems that not long ago the town issued bonds in aid of the construction of a certain railroad. The railroad never was built, but the bonds were issued just the same, and sold to innocent persons, and the proceeds spent. Now the innocent holders would like to have the interest on their bonds paid, if not the principal, and show a certain disposition to collect their coupons by levying on the town property. As this would be inconvenient, and the citizens have other uses for their money than paying coupons to the bloated widows and orphans who bought their bonds, they have devised a little expedient for, so to speak, amputating the head of the body corporate, so that when the sheriff comes with his writ there is no one on whom to serve it. As the town taxes have to be assessed, and the appropriations made for municipal purposes, it is necessary for a brief period to have city officials. These are regularly elected every year, but immediately after the election the new mayor and aldermen meet in a room with barricaded doors, and vote all the taxes and appropriations for the year. As soon as this is done, and before the sheriff has had time to break down the doors and get at them, they all resign, leaving the city for the remainder of the year without any official representative on whom a writ can be served.

A NEW blasting-cartridge, for use in mines, has been invented by M. Kosmann, of Breslau, which, although its inventor expects wonders from it, appears to the ordinary mind to present some doubtful points. The explosive, or rather, the expansive agent employed is hydrogen, which is liberated by chemical action in the cartridge. This is composed of a glass tube, contracted near the middle and also at the end, so as almost to close it. In the larger division, which is at the sealed end of the tube, is put a mixture of equal parts of crude sulphuric acid and water; and a cork is inserted in the opening by which the two portions of the tube communicate. Before charging the drill-hole, the workman plasters it around with clay, and then primes the cartridge by filling the smaller cavity with the spongy refuse zinc collected from the refineries. A little iron rod is placed in the zinc, with the end projecting through the mouth of the tube, and the cartridge is then inserted in the drill-hole, and the mouth closed with clay, the end of the rod only projecting outside. To fire the blast, the workman strikes the end of the rod, driving it in, and either pushing out the cork in the partition between the acid and the zinc, or breaking the tube, so that in either case the acid and the metal are brought in contact, and hydrogen is generated by the decomposition of the water. The rod is made conical, with the large end inward, so that the expansion of the gas forces it tightly into the opening, and the inventor calculates that the pressure exercised upon the walls of the drill-hole will amount to more than five hundred thousand pounds to the square inch, so that the hardest rock can be torn apart with certainty; yet the action will be so slow that the workman can easily escape after firing the charge. The *Revue Industrielle* says that the practical efficiency of this new cartridge has not yet been proved, and we may be allowed to doubt whether it ever will be. Of all known substances, hydrogen is the hardest to keep in captivity. Even under the pressure of the atmosphere it escapes freely through India-rubber or cork, and is said to pass slowly through most metals; and that M. Kosmann can confine it for any length of time, under a tension of half a million pounds to the square inch, by barriers of rock and clay, seems to us decidedly improbable. Even, however, if he should be able to do so, and to burst rocks in that way, the result of the operation would not be altogether satisfactory. According to the inventor, one of his cartridges, on being fired, produces about one hundred and twenty cubic feet of hydrogen, which, if the blast succeeds, is set free in the gallery of the mine. This quantity of hydrogen, meeting the air of the mine, would mix with three or four times its own volume to make at least five hundred cubic feet of a terribly explosive gas, essentially the same as the fire-damp of a coal-mine, but far more explosive and dangerous, and no more work could be done until this had cleared away. The employment of a single cartridge in a gallery of ordinary size would charge this with an explosive mixture for something like a hundred feet from the heading, and, unless artificial ventilation were used, it would be many hours, in rock of a compact sort, before it would pass away.

THE Houses of Parliament, or, as we suppose it should be called, Westminster Palace, in London, has suffered for many years from bad drainage. The building stands on the very edge of the Thames, and the basement floor is nearly at the level of the main sewer, so that after a heavy rain, which occurs very often, the great drain of the Palace is choked, and stands full of sewage until the water subsides, when the greater portion runs out, although a certain quantity, filling the drain from one and one-half to two feet deep, always remains nearly stagnant in it. The drain, being of brick, is very pervious to sulphuretted hydrogen and the other unpleasant constituents of sewer air, to say nothing of the bubbles of unfiltered gas which escape through seams and unvented traps, and for a long time the atmosphere of the building has been getting more and more foul. Legislators, having their minds intent on more important affairs, do not pay much attention to smells, but not long ago the stench from the drains was so overpowering in the House of Commons that the House was compelled to adjourn: and, as a day's work of the Imperial Parliament of Great Britain is a serious thing to lose, the Commons, at their next session, appointed a committee to see if the smells could not be abated. The chairman of the committee was a very distinguished chemist, Sir Henry Roscoe, and a well-known and able London architect, Mr. L. H. Isaacs, who is a member of Parliament, was also appointed on it. It is hardly necessary to say that there are few domestic smells which an architect and a chemist could not investigate with success, and Mr. Isaacs did his part of the work thoroughly. He crawled twice through the drain, at the risk, we should say, of his valuable life, and made notes of its condition, which he laid before the committee. The engineer who had originally planned the drainage scheme was then called in, and with his help a new arrangement was devised, which has since been carried into execution.

THE main peculiarity of the new plan is that the drain as now laid discharges independently of the city sewer, and its outfall is, moreover, about twenty feet higher than the inlet. That the outfall must be higher than the inlet was a foregone conclusion. When the Palace was built, it was believed that rivers were especially designed by Providence for receiving drainage; and the Palace drain simply went by the shortest course from the basement to the river wall, where it emptied its contents into the stream. After the passage of the Rivers Pollution Act, and the commencement of the vast works intended to keep the sewage of London out of the Thames, the Parliament-House drainage could no longer be suffered to flow into the river, and the course of the conduit was modified so as to secure an outfall into the great Metropolitan low-level intercepting-sewer. This intercepting-sewer, being unavoidably at about the same level as the drain from the building, backed up water into it whenever the sewers ran full, and the ordinary flow of the intercepting-sewer maintained a certain depth of water in the drain at all times except when it was purposely shut off and pumped dry. The drain being a huge brick tunnel, ten and one-half feet high and three feet wide, which, after heavy showers, was filled nearly to the top, the pumping was a serious operation, and as soon as it was over, the sewage began to accumulate again in the bottom of the conduit. The first step in modifying all this was to deduct about ninety-seven per cent from the capacity of the main drain by the simple process of building it up with concrete, and laying a twelve-inch iron pipe along the bottom. This pipe is ample for carrying off all the rainwater which falls on the roofs and courts, besides all the drainage of the building, and it is hardly necessary to say that it is far more easily kept clean than a larger conduit could be. The twelve-inch pipe leads to a row of Shone's ejectors, which are tanks in which air under pressure is admitted intermittently over the surface of the liquid contained in the tanks, forcing it out into a discharge-pipe, as the steam does in a pulsometer pump, and, in the pauses, allowing the tanks to fill from the inlet-pipe. The compressed air for operating the ejectors is obtained from a set of four gas-engines, of four horse-power each, which are placed in the basement of the Palace, six hundred and fifty feet from the ejectors, and transmit the compressed air through small pipes. With the average flow of water through the drain in dry weather, the tanks fill in ten or fifteen minutes, and half-a-minute is sufficient to force their contents all out into the discharge-pipe, which empties into the city sewers at a much higher level. Ordinarily, even in such rain storms as occur in London, one gas-engine and one ejector will move all the sewage rapidly to the outfall, but in cases of storms or floods, the others are ready to quadruple the capacity of the apparatus at a moment's notice; and to be sure that notice is given, an electric signal rings in the engine-room whenever the sewage comes into the ejector-tanks faster than it is carried off. It is to be hoped that our great public buildings may always be built on higher ground than the damp, low Parliament-Houses, but there are some situations, such, for instance, as New Orleans, where sewage must either be carried above ground in order to get any flow to the outfall, or must be lifted by some such apparatus as the ejectors used in this case.

MOST of our readers probably take some intelligent interest in photography and the allied arts, particularly those which concern themselves with the reproduction of photographic images by the printing-press. Among the innumerable processes devised for this purpose, none, to our mind, has yet equalled that employed by Mr. Ives, of Philadelphia, and most persons who see the results of his work are anxious to know how they are accomplished. As every one knows, the basis of all the modern processes for making photographic-relief plates suitable for use in the printing-press, consists in the translation, so to speak, of the soft, smooth gradations of an ordinary photographic image into one formed of black dots or lines, the dots or lines being larger and thicker in the deep shadows, and disappearing almost entirely in the lights. By impressing an image so transformed upon the metal plate, it is possible to obtain, by treating with acid, the dots in relief, and to impress them as dots on paper, producing a picture like a fine wood-engraving. The conversion of the ordinary photographic image into one formed of dots is usually effected either by taking a negative with a wire netting interposed between the object and the sensitive plate, or by using a fine silk gauze under the negative in printing upon the prepared relief plates; but there are other methods, more or less successful, also in use. The Ives process, although it arrives at the same result, differs considerably in the detail. Instead of photographing a printing through a netting of any kind, the negative is taken in the usual way, and printed on a plate covered with gelatine, in which bichromate of potash has been dissolved. The well-known effect of light upon "bichromatized" gelatine is to render it less soluble in water, and when, after a sufficient exposure to the sun, the gelatine film is soaked in cold water, the portions which have been shaded by the opaque parts of the negative absorb water and swell, while those which have been hardened by the sunlight remain unchanged, and those corresponding to the half-lights of the negative swell, but not so much as those which have been wholly shaded. After sufficient soaking, the film is taken from the water, and a plaster cast is made from it. This, of course, presents all the irregularities of surface of the gelatine in reverse. The portions of the gelatine shaded by the opaque parts of the negative, which correspond to the bright parts of the object photographed, having been most swelled by the water, are represented by hollows in the plaster surface, and the dark parts of the object, which are transparent in the negative, and allow the sun to act freely through them in hardening the gelatine, and preventing it from swelling by absorption of water, are represented in the plaster as projections. The next step is to treat the white plaster plate, the reliefs and depressions of which are almost invisible to the eye, with a pad of vulcanized rubber, having minute points or lines, according to the character to be given to the prints, all over its surface. The pad is inked and applied to the plaster. On the most projecting portions of the plaster the points press so firmly as to flatten a little, and the ink which they carry is spread out, so as to cover these portions with a uniform black tint. On the less elevated parts the points only touch the plaster, producing dots of greater or less size according to the degree of pressure, and in the depressions, which correspond to the high lights of the object, the points do not touch the plaster at all When the inked pad is removed the plaster block thus shows the picture fully rendered in black dots on the white ground. Another negative is then taken from it, which, presenting nothing but black masses and dots, variously distributed, can be used at once to produce a relief plate in the same way as a negative from a line drawing, and the contrast, which can be obtained by the use of the plaster, between the masses of unbroken black and the pure whites of the high lights, gives the prints a brilliancy which process prints are apt to lack.

ANCIENT AND MODERN LIGHT-HOUSES.[1] — XII.

NORTHWEST SEAL ROCK.

NORTHWEST SEAL ROCK, or, as it has been re-christened St. George's Reef Light Station, is now in process of construction on a small rock forming the outermost danger of St. George's Reef, opposite Crescent City, California.

Capt. A. H. Payson, Corps of Engineers, U. S. A., is in charge of this work. The high rocky coast from the bight of Crescent City to Point St. George, four and one-half nautical miles, trends in a northerly direction, and is bordered by a belt of numerous high, rocky islets and sunken dangers, nearly a mile in width.

North of the Point the coast-line turns nearly at right angles to its previous direction and becomes low and sandy, but the direction of the obstructions remain unchanged for about six nautical miles to seaward, and make what is known as St. George's Reef.

Inside the reef, close under Point St. George, is a broad and deep channel, sometimes used during heavy northwest weather by northerly-bound steamers, but only in daylight and clear weather, and probably at some risk from sunken dangers not shown on the charts.

The position of Point St. George, about midway between Capes Mendocino and Blanco, would naturally suggest it as an appropriate place for a first-order light, did not experience at Cape Blanco, an almost similar situation, show that the headland itself would but imperfectly answer the purpose. When there is not dense fog there is usually so much haze in this climate that vessels forced by the reef to give the point a berth of ten to twelve miles, would rarely see even a first-order light upon it, while a fog-signal, six miles from the danger it is designed to mark, would be practically useless.

Northwest Seal Rock is nearly two miles outside of its nearest neighbor, Southwest Seal Rock, with a clear and deep, but unused passage between, and has close to it on all sides from one hundred and eight to one hundred and eighty feet of water, with no outlying dangers. It is a mass of metamorphic material, varying considerably in character, extremely hard to drill, and brittle under the action of explosives, but offering almost the resistance of glass to the action of the sea.

The superficial area of the rock at the water-line is about forty-six thousand square feet, and its general form is an oval with a high central ridge running nearly east and west along its longer axis, sloping gently on the north, but more steeply on the sides from its crest to the sea level. To the westward is a prolongation, called Little Black Rock. The greatest height of the ridge, fifty-four feet, is at its eastern end.

The gentle lower slopes and smooth, water-worn surfaces, were plain indications that the sea at times swept over its top. Yet, to gain the requisite area for the foundation, it was necessary to excavate at a point fully thirty feet below the crest. There was no space available on the site where even temporary security of men or material could be assured, and the frequency and quickness with which all parts of the rock became untenable, greatly exceeded any previous anticipation. It is a peculiarity of this coast that a heavy sea, which results from off-shore winds and cannot be predicted from any sign, will begin to break upon the rock; and so suddenly did this happen during the working season of 1883 that in three or four hours from a dead calm the topmost surface of the rock was swept. The general features of the site for construction upon it could hardly have been more unfavorable.

Crescent City, thirteen miles away, is the nearest point at which a landing on the coast is possible. This is a shoal and rock-encumbered bight, quite open to the south and west, but offering a somewhat disturbed shelter to be relied on from the middle of June to the following September. During the remainder of the year it is exposed at any time to the entrance of the prevailing westerly swell which breaks outside the anchorage and endangers any vessel lying in it. Crescent City is a small and isolated settlement, distant by difficult mountain roads one hundred and fifty miles from the telegraph, and more than three hundred miles from a railway. The nearest harbor is Humboldt Bay, where there is a good-sized town and frequent communication with San Francisco. The depth of water on the bar varies from fourteen to twenty feet. This often causes detention, but is not a serious obstacle. Its main drawback as a depot is its distance from the rock, but this is unavoidable.

The project for the foundation consisted of an oval outline adapted to that part of the rock which included the required area, and necessitated the cutting of four horizontal terraces for the foot of the pier-wall, and the suitable preparation of the mass of rock left standing within, for a bond with the pier filling; provision was to be made for water storage in the otherwise solid mass of the pier below the top of the rock.

[1] Continued from page 189, number 590.

Since it was impossible to leave men and material on the site, it was necessary either to take them to and from the nearest landing at Crescent City, as occasion served, or to provide floating accommodations near the rock. The saving of time, so vital to success, and other evident advantages of the latter course, were strong arguments in its favor; it was, therefore, adopted, and a top-sail schooner of one hundred and twenty-seven tons, called "*La Ninfa*" was selected. She was nearly new and strongly built for carrying copper ore on the west coast of South America, and had shown her fitness for the work by being used temporarily as a light-ship to mark the wreck of the "*Escambia*" on San Francisco bar. She was altered and in various ways specially fitted for the work. Her outfit was made as complete as the large experience of Mr. Ballantyne could suggest. He had been appointed superintendent of construction of this work, owing to his success in building the station at Tillamook Rock, a work of similar character, and, besides, many of the men who had worked there were also employed here.

The steamer "*Whitelaw*" was chartered to tow the schooner to the rock and to place the moorings. After several attempts she succeeded in doing so, arriving at the rock on the morning of April 9, 1883; she placed the big twelve thousand pound mooring and attached the schooner to it, but was then, owing to the boisterous condition of the sea, compelled to abandon the attempt to place the other moorings and stood off to sea. From then until the sixteenth a continuous gale prevailed, the schooner holding on in great discomfort and the steamer lying by in the offing, but the weather then moderated sufficiently to enable soundings to be made on the site of the remaining moorings. They disclosed the fact that the depths were greater than those shown on the coast-survey chart, so Mr. Ballantyne availed himself of the presence of the steamer and went in her to Humboldt Bay to get larger spar buoys, where he was detained until the 27th. Leaving on the evening of that day he arrived at the rock on the 28th only to find that the schooner and the big mooring-buoy had both disappeared. The weather becoming fine, the steamer laid the remaining moorings, and then cruised in the neighborhood of the rock until the 3d of May, awaiting the re-appearance of the schooner, when she again went to Humboldt Bay to communicate with Captain Payson for instructions.

On arrival there she found that the "*La Ninfa*" had been sighted during a gale off Cape Mendocino, on the 30th of April. The "*Whitelaw*" put to sea in search, and on the 6th of May fell in with the missing vessel twenty-five miles south of Crescent City. She had parted her new eight-inch hawser during a furious gale on the night of the 22d of April, and had since been blown first north and then south in a vain endeavor to keep near her work. Taking her in tow the steamer, for the second time, placed her in position on the morning of the 9th of May, and the weather being favorable a landing was at once made on the rock, ring-bolts put in, a temporary traveller rigged, and the work on the rock finally and auspiciously begun.

Arrangements were made with a small coast-steamer, making regular trips between Crescent City and San Francisco once every ten days, to visit the rock on each trip.

The southerly winds, which had so far prevailed, were almost immediately succeeded by the violent northwesters of early spring, and rock-cutting made but little progress until the early part of July. In the mean time a small donkey-engine had been put on the "*La Ninfa*" to assist in handling the numerous moorings and spring lines, and to work the traveller. A new bad-weather mooring was put down to replace the one lost, various attempts to recover it having failed.

From this time forward the work went on without material interruption. There was much parting of lines and tackle, and the men often had to be taken hastily off the rock just after they had been put on, but in spite of many narrow escapes and some dangerous accidents, there was no serious injury to any one. Work on the north low bench was the most difficult, though it was twenty-five feet above the sea; the men there were almost constantly drenched with spray, and hardly a day passed when the sea did not break upon it at high water.

During a gale on the 29th and 30th of September stones, over a ton in weight, which had been rolled overboard from this bench, were swept like chips up along its whole length and over again on the east end. On September 10, while two quarrymen were drilling a hole on the lee side, just below the top of the rock, a tremendous sea swept completely over it, washing them down the steep south slopes nearly thirty feet, where they fortunately lodged on the south bench, none the worse save for a few bruises.

It was judged best to store the high explosives, of which there were at times six hundred pounds in stock, on the rock itself. The magazine, built of heavy timbers, was put in a square excavation, made especially for it, in the topmost pinnacle, fifty feet above the sea, and secured by a network of four-inch lines set over its top as tightly as possible to ring bolts in the rock; yet the magazine was several times twisted around by the sea under its rope lacing. The presence of this large amount of explosive in such close proximity to the blasting was a source of much apprehension, but the precaution was taken to wrap it in many thicknesses of tarred canvas and no accident occurred.

To avoid the delay of frequent and tedious changes in the position of the schooner she was hauled in close enough to the rock to permit the use of the wire traveller-cable, and kept there as long as the spring lines held. She was much exposed to flying fragments, which often went over her in showers, marring her appearance a good deal, but doing no serious damage.

The total distance over which the cage of the traveller passed was three hundred and fifty feet. The traveller-block was made of two pieces of boiler-plate, bolted together, and forming the bearings for the axles of four grooved gun-metal wheels, which just held the cable between the upper and lower pairs, and made it impossible to nip or bind, even were it twisted completely round the cable by the sea. The cage was a horizontal iron ring four feet in diameter, suspended from the traveller-block by three cords, attached at equal distances around its circumference, and having hung below it a piece of plank on which the passengers stood. At first the men were hauled to and fro singly in a breeches-buoy, but the cage was found much more convenient as it permitted the transport of at first four, and later of six men at a time, and allowed them to easily extricate themselves should any accident happen. The whole arran ement worked perfectly, and by the aid of the engine a round trip, taking off six men, and return, could be made in three minutes. The shore end of the cable being some sixty feet above the sea, and the lowest point of its curve not over fifteen feet, the cage, when released from the rock ran down this slope with great speed. Taking advantage of this, and standing by to haul in with the engine, the men were often taken on board dry, when every sea went over the low part of the cable; such confidence did they gain in this means of retreat that they did not think of leaving the work till the sea began to run continuously over all the working levels; then, lashing their tools to ring-bolts prepared for the purpose, the cage was put in use and in twenty minutes all hands would be in safety. But one accident occurred with it, and that was the parting of the traveller-rope in a heavy sea just as four men were being swung off the rock, but, luckily, they had only started, and so fell unharmed on the east bench. Whenever the sea would permit, the men were taken to and from the rock in a surf-boat to save the costly item of water and also time. It was extraordinary to see how, little by little, they became more venturesome, till, at the end, they would jump out one by one from the boat, holding to a life-line from the rock, with the sea rising and falling fully fifteen feet on the nearly vertical east face.

The schooner's position near the rock, the character and position of the moorings, and the manner in which the traveller was rigged, are shown in the accompanying plate. About the middle of August the foundation benches had been roughly formed, and needed only the finishing touches of the stone-cutters.

The position and size, eleven thousand cubic feet, of the cistern having been fixed, the party commenced to work on this; the ten days from the 18th to the 28th of September were the finest of the whole year, and the men, warned by the lateness of the season and the ominous westerly swell, and very anxious to end their long seclusion, worked with such eagerness, that, contrary to the expectations of the foreman, everything planned for the season was finished by 2 P. M., September 28. The tools were taken on board that evening with the men, and by 2 A. M. next day the long-expected first winter gale had reached such violence that all the rock-lines parted, and the schooner was lying by a single line to the outer buoy. The storm continued until the 1st of October, and on the 2d the steamer "*Crescent City*" came out to the rock with instructions for closing up the work. As it was too rough to communicate there, the schooner, at 9 A. M. on the 2d of October cut her last remaining mooring-line and followed the steamer under the lee of Point St. George, where the stone-cutters and quarrymen were taken off, and she started to make the best of her way to San Francisco, where she arrived forty-eight hours after, being favored with a strong northerly gale. The steamer did not arrive at San Francisco until three days later, when the working force was disbanded and the plant stored at the depot on Yerba Buena Island.

The sketch shows the appearance of the rock at the end of the working season.

The next year's work was dependent on the action of Congress in granting an additional appropriation, and, as it was a long session, no more money would be available until July or August; therefore, to save time, the steamer "*Whitelaw*" was sent to the rock to replace the moorings and to erect the big derrick in anticipation of the season's work; this she safely accomplished by July 2, but as Congress appropriated but $30,000, too small a sum to continue work at the site, it was devoted to the preparation of material at Humboldt Bay.

Before any work had been done at the rock it was first determined to get the necessary granite from the Sierra Nevada and to use sandstone for filling, but a rumor having reached Captain Payson that granite had been discovered on Mad River near the railroad from Humboldt, he at once examined the place and found a deposit of excellent quality, but no evidence of the existence of the rock in place. The side of the mountain showed, within perfectly defined and narrow limits to the right and left, but extending for a considerable distance with less-marked boundaries up and down the slope, the tops of what looked like water-worn boulders, some of them of apparently several hundred tons in weight.

This discovery materially diminished the cost of the work and made the delivery of the stone more certain and speedy. Enough granite was found here not only for the facing, but also for all the interior filling. It was taken from the quarry to the depot at Humboldt to be dressed to shape.

The next year, 1885, Congress appropriated $40,000 more, which was also devoted to quarrying and dressing stone.

In 1886 there was no money appropriated.

The small appropriation of 1884–5 necessitated the abandonment of measures already taken, the waste of much money in useless preparation, and the suspension of work upon the rock.

In 1887 Congress appropriated $120,000, active preparations were at once made to commence laying the stone already prepared, and it is hoped to complete the first eight courses on the rock by the end of this working season.

The amounts so far appropriated are as follows:

August 7, 1882, . . .	$50,000.
March 3, 1883, . . .	50,000.
July 7, 1884, . . .	30,000.
March 3, 1885, . . .	40.000.
March 3, 1887, . . .	120,000.
Total, ...	$290,000.

It will take about $160,000 to finish the work; had the appropriations been of adequate sums it would now be completed, and at much less expense. In a future article I expect to finish the history of this light-house, which may fairly rank among the *sea-rock* light-houses of the world.

ON THE THEORY OF THE ABANDONMENT OF ANCIENT LIGHTS.[1]—II.

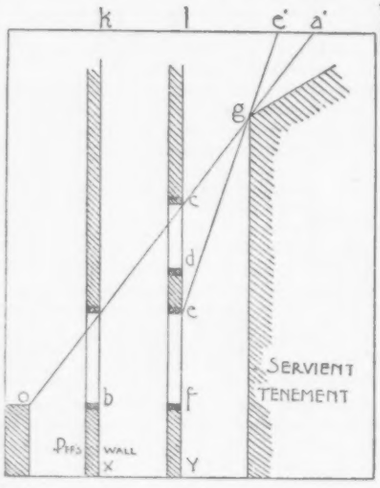


Fig. 3.

FROM these examples it surely follows that if "to abandon" means to cease to use, then the above principle, which requires the position of the new window "substantially to coincide" with that of the old one, is based on a fiction, and that the application of it must constantly produce absurd and (it is submitted) unjust results. Yet it will be observed that learned judges continue to apply it, while, almost in the same breath defining the prescriptive right as a right to a certain "cone"[2] of light, or to the enjoyment of certain specific pencils of light, the access of which has been enjoyed for the requisite number of years. But these pencils of light must come from some part of the sky area, and in so far as they come from a portion of the sky area not intercepted by the new aperture, in so far the new aperture does not enjoy the same light, is not "lighted in the same manner," and finally does not "correspond" (in any sense relating to light) to the aperture of the original window. To refer once more to Figure 3, which we reprint for the convenience of our readers. Surely nothing could be clearer than that *c d* (and not *e f*) is the aperture in the new wall which corresponds, so far as is possible (in respect of the light intercepted by each), to *a b* in the old wall. If the plaintiff's light were derived from an area equal and exactly opposite to *a b* on the surface of the wall of the servient tenement, then and then only could the aperture *e f* be said to "correspond" (in the above-mentioned sense) to the aperture *a b;* for in that case, and in that case only, would identity in position involve identity (so to speak) of light.[3]

Now, without denying that a principle based on a fiction (legal or otherwise) may sometimes be practically useful, is it not possible here to apply one which is based upon facts, and which would yet afford a sufficiently clear test of the rights attached to the dominant and servient tenements respectively?

The result of the above considerations is this, that a prescriptive right to light having been acquired in respect of the aperture *a b*, over the obscuring horizon at *g*, the owner of the servient tenement is restricted in the exercise of his *primâ facie* right to build as he pleases by two lines of limitation shown in Figure 4.

(1) Below the level of the obscuring horizon *g*, he cannot advance his building (supposing him to have on other grounds the right to advance it) beyond the line *g b*,— *g b* representing one side of the sectional volume of light,[4] *g b p* illuminating the window *a b*.

(2) Above the level of the obscuring horizon, *g*, he cannot raise his building (supposing him to have on other grounds the right to retire it, and to raise it) above the line *g a'*,— *g a'* representing (in section) one side of the inverted pyramid shown in Figure 1 A,

[1] A paper by George H. Powell, Barrister-at-law, published in the *Builder*. Continued from page 212, No. 592.

[2] See remarks of Bowen, L. J., referred to above, and *passim*.

[3] It will be observed (Fig. 3) that the aperture *c d* is smaller than the aperture *a b*. If it were not so, *c d* would, of course, intercept a *larger* area of sky than was intercepted by the original aperture, *a b*. But this would confer on the plaintiff an advantage which he would have no right to retain, and of which the defendant could at any moment, before a fresh period of prescription had elapsed, deprive him. In practice, the plaintiff would often take his chance (since the decision in Tapling *v.* Jones, q. v. *ante*) of acquiring a new right. We are here considering only the continued enjoyment of his old rights unimpaired.

[4] Shown as applied to a horizontal skylight, in Figure 1 B.

whose base represents the intercepted area of sky. He can, for instance, advance his building below the present horizon g (Fig. 4) to the point n. He can raise it above the horizon g to the point m. But he can do no more than this. And the positions of the lines of limitation $g\,a'$ and $g\,b$ are (it is needless to observe) always easily determined, depending as they do on the angles which $g\,a$, $g\,b$ (straight lines drawn from the obscuring horizon to the top and bottom of the window respectively) make with the straight line $a\,b$.

The above being the restrictions imposed on the defendant in the enjoyment of his property, it only remains to add that (assigning but its ordinary common-sense meaning to the term "abandonment") whenever the plaintiff so changes the position of his window that it becomes possible for the defendant to advance or to raise his building beyond either of the aforesaid lines of limitation without interfering with the enjoyment by the plaintiff of whatever of his original prescriptive rights he still continues to enjoy, the defendant can so advance or raise his building with impunity.

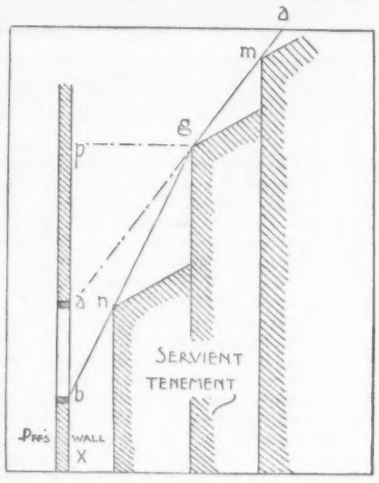


Fig. 4.

Now to return to the questions originally propounded, and to answer them on the principles above laid down.

(1) When for the original window $a\,b$ is substituted [1] a window at $c\,d$ (Fig. 3), here there is no abandonment, since, whether we consider the prescriptive right to be a right to the enjoyment of certain specific pencils [2] of light, or a right to intercept (in the manner shown in Fig. 1 A) a certain area of sky, the plaintiff is in either case, so far as is compatible with the change in the plane of his wall, in the same position as he was before.

The defendant's rights are similarly unaltered. He is still entitled to advance his building to any point on the line $g\,b$, or to raise it to any point on the line $g\,a'$. He cannot do more than this without obstructing the passage of light which used to fall upon the original window $a\,b$, and now falls upon the new window $c\,d$; and on what ground could he be justified in doing this?

(2) When for the original window $a\,b$ is substituted one in the (so-called) "corresponding" position $e\,f$. In this case there is an abandonment of the enjoyment of all the light coming from the sectional area of sky between the points e' and a' (Fig. 3). At least all the said light (which certainly was used before) is now used no longer; for it is clear, if the sectional area $e'\,a'$ were the only luminous part of the whole area $k\,a'$, that, while a window in the position $a\,b$ would be lighted, a window at $e\,f$ would receive no light from the sky at all. There being, to a certain extent, an "abandonment," how far does this affect the defendant's rights?

It is surely of the essence of the theory of "abandonment" that these rights (in the case supposed) should be enlarged in so far and only in so far as those of the plaintiff's are, by his acts, shown to be "waived." *Primâ facie* if he ceases to enjoy a right he may be taken to have "waived" it. In any case the defendant cannot be deprived of his previous right to build up to any point on the line $g\,b$, as, for instance, to raise an obscuring horizon at the point n (in Fig. 4). Now it is clear that a window "in the same position" as $a\,b$ (in the advanced wall) might be totally obstructed by an obscuring horizon at n. So far the plaintiff would only have incurred a loss by his own act, but the defendant gains something. Whereas he could previously raise his building (above the horizon g) to any point on the line $g\,a'$; he can now raise it to any point in the line $g\,e'$, since, as we have seen, the light from the area between e' and a' does not reach the plaintiff's window in its new position at $e\,f$, and there can be no reason why the defendant should not obstruct the passage of that which the plaintiff, through his own act, no longer enjoys, and for that very reason has no longer a right to enjoy.

(3) When, supposing $e\,f$ to be the original window, there is substituted for it a new window in the same plane, in the position of $c\,d$. Here the original "line of limitation," below the obscuring horizon g, would be a line drawn from f to g.[3] But since the plaintiff has, by the substitution of his new window, $c\,d$, for the old window, $e\,f$, relinquished the enjoyment of all light passing below an imaginary line $g\,d$; there has, therefore, been an "abandonment" *pro tanto*, an "abandonment" of something affecting the defendant's rights. The latter may now advance his building to any point on the line $g\,d$. But he cannot do more than this without obstructing the passage of light which the plaintiff enjoyed before and is still enjoying.

But the same, or rather a larger area of sky, is intercepted by $c\,d$ than was intercepted by $e\,f$. But this, as has been already explained, cannot impose any further restriction on the defendant. He has still the right to raise the servient tenement (above the horizon g) to any point on the line $g\,e'$.

(4) Still supposing $e\,f$ to be the original window, for which a new one (in another plane) is substituted in the position $a\,b$. In this case the line of limitation below the obscuring horizon g will be advanced to $g\,b$, for similar reasons to those given in the last case, and (also as in the last case) the defendant may still raise his building (above the obscuring horizon) to any point on the line $g\,e'$.

(5) Lastly, supposing $c\,d$ to be the original window, and a window in the same plane in the position $e\,f$ to be substituted for it. Here there is indeed a practical abandonment. It only remains (as in the said case, *ante*) for the defendant to take advantage of this. The plaintiff has moved his window into a position where the acquired line of limitation, $d\,g$, is of no use to him, since the defendant, by raising his building, as he had always a right to do, to a point on the line $d\,g$, might totally obstruct the new window at $e\,f$.

This case, therefore, requires no further consideration. The plaintiff has, so to speak, advanced into the defendant's territory, and, if he loses by this step, has clearly only himself to blame.

It will be seen that of the above five propositions the greater part are directly contrary to the law as at present applied. Yet they all result from the consistent application of a perfectly simple principle, which, moreover, finds a considerable amount of support (implied if not expressed) in many judicial expositions of the law of ancient lights. The inconsistency (as it is submitted to be) in these expositions, taken as a whole, which suggests the adoption of such a principle, may be shortly summarized as follows:

It is unquestioned that, according to existing law, when the plane of a wall is advanced or retired, the prescriptive right existing in favor of a window in the old wall is held to be retained in favor (only) of a window in the new wall, substantially "in the same position" as the original window. But when we inquire why this is so, the answers are various, though all equally unsatisfactory.

In one place we are told that it is because the two windows are lighted "in the same manner." But any meaning which can be assigned to this rather loose expression involves an untruth, since both the total amount of light received [4] and its angle of incidence are in each case different. In another place, what is perhaps the same idea is expressed in more definite language. The new window, we are told, enjoys the same "cone of light" and receives "the same pencils of light." This explanation is even more openly repugnant to common sense and common observation. "The same pencils of light" (assuming the obscuring horizon to be above the level of the window), unless they follow a zig-zag course like that of a flash of lightning, could by no possibility reach the two windows, and the "cones of light" in the two cases are not even similar cones. Therefore, if the object really desired is that the window should be lighted in a similar manner, or in as nearly the same manner as possible (in respect of pencils, cones of light, and intercepted area of sky) as the original window, then to put the new window "in the same position" relatively to the wall as the old one, is to go out of our way to avoid the attainment of that result.

In fact, if the prescriptive right be a right to the enjoyment of light (as it is universally described) and not a right to the enjoyment of a window in a certain position, the present law, under the pretence of preserving the exercise of that right, in fact insists on its abandonment. The owner of the dominant tenement is constantly held to have abandoned that which he still continues to enjoy, and as often to have preserved his prescriptive right (strangely enough) by giving up the enjoyment of it. Surely such confusion in the theory of the law is not unavoidable. It has been said that a Court of Justice will not listen to elaborate mathematical calculations, and it is, no doubt, in the highest degree desirable that the rules governing the acquisition and destruction of this most important of "urban servitudes" should be clearly intelligible not only to the judicial but to the ordinary lay mind. But if a mere observation of well-known facts and obvious phenomena provides us with an intelligible test, should we not accept it?

Whether or not the above suggestions contribute to the attainment of such a result, the desideratum clearly is this: That, given the dimensions of the window in the dominant tenement and the position of the obscuring horizon, we should be able at once to lay down a definite line of limitation, any material transgression of which by the owner of the servient tenement, except in so far as such transgression interfered with the enjoyment of that which the owner of the tenement had elected no longer to enjoy, would constitute, *ipso facto*, a breach of the prescriptive right.

---

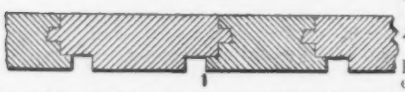
[1] In this and the following examples, the original window is, of course, assumed to have been blocked up when the new light is opened.

[2] *I. e.*, to pencils from a specific point in the sky area, — inclined at any specific angle to the vertical. This is presumed to be the meaning of the expression used in the judgment above mentioned, of Bowen, L. J. (see 31 Ch. Div., at p. 572), — "The pencils of light which had passed through" the original aperture, etc. But pencils of light falling upon two windows in the position $a\,b$ and $e\,f$ respectively (see Fig. 3) must of necessity either come from *different* points in the sky area, or *differ* in their angle of incidence; whereas a considerable number of identical pencils would pass through $a\,b$ and $c\,d$.

[3] $g\,f\,l$ would represent the original volume of light illuminating $e\,f$, as shown in section.

[4] Which varies as the intercepted area of sky.

JOINTS IN WOODWORK.[1]—III.



IN a previous paper reference was made to the importance of considering the effect of shrinkage in timber in forming joints of all kinds, and it was shown how the effect of shrinkage or expansion in the timber would have the effect of altering the angle of any piece cut obliquely. A case of interest, to which it is worth while making reference, is that which sometimes arises in door trimmings of the old class, in which corner blocks are not used. The moulding or architrave is mitred at the corner, and where imperfectly seasoned timber is employed, the joint will open at its lowest part. In some cases, however, it will open at the top, although not frequently.

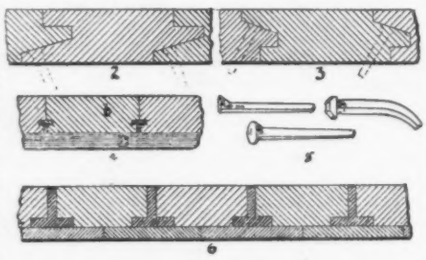
A case occurs to the writer in which both descriptions of opening in the joints were found in the same house, although a uniform quality of timber had been used throughout. Having in mind the manner in which timber shrinks, the cause of this was not far to seek. In those door trimmings in which the architrave opened at the bottom the timber shrank, as will be understood from what has already been said. In those doors in which the mitre opened at the top, the doorways were located in a damp place, and as a consequence became swollen. The correctness of this explanation was shown by the fact that all the mitres opening at the bottom were in the upper part of the house, while those opening at the top were without exception situated in the basement.

The manner of forming the connection between thin boards, such as flooring, sheathing and clapboards is of importance, for here it is that it is of great moment to allow for shrinkage, to prevent cracking and other damage to the parts. The simplest form of laying flooring is that sometimes known as "folding" or "shot edges," in which the boards are laid side by side, and are forced up closely to one another. The objection to the opening of the joints brought about by shrinkage may be overcome by grooving and tongueing, by rebating and filletting, or by any of the other usual means which are too well known to need any description here.

As illustrating the manner in which special joints of this kind have been formed, we give a few of the principal joints for which patents have been taken out in recent years. It is often interesting and useful to observe the thought that has been given to the improvement of any particular contrivance, as exemplified by the patents in the United States Patent Office. Generally speaking, the public are familiar with the broad and generous rules by which patents are granted on the smallest and often most insignificant improvements, but many would be surprised to find the extent to which this is carried.

An improvement in joints for sheathing is represented in Figure 1. It is designed to prevent warping, splitting and opening of joints, and was patented by N. G. Northrup in 1873. Both edges of the board are grooved, formed with rabbets, and blind nailed to the studding. The joint would probably prove very effective, but it is doubtful whether the considerable labor necessary in forming the joint is required, excepting in extreme cases.

Figures 2 and 3 show two forms of a joint for flooring, which formed the subject of a patent granted to Edward M. Kuhn in 1876. It relates to improvements in joints in that class of wood-flooring which may be termed "nailless," *i. e.*, those in which no nails appear on the surface. The joint is a good one, that represented in Figure 3 being, in most cases, the better of the two, as there is a greater amount of timber for the nails to pass through, and hence a stronger floor is the result.

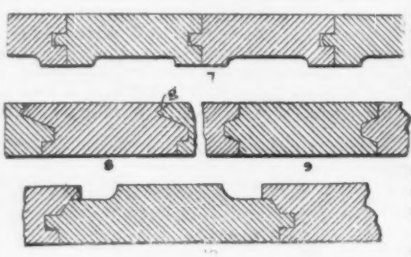


A floor of a somewhat unusual description is shown in Figure 4, which was patented by O. S. Dickinson in 1877. In this the floor proper, *B*, is covered with blocks *b*, which are held in position by T-strips nailed to the floor, the blocks being grooved to receive them. The construction is most suitable for those floors which require to be particularly smooth and constructed of hard wood. In the case of soft wood there would be a strong liability of the small projecting fillet beneath the groove breaking off.

The nails represented in Figure 5 are employed in forming a floor under the patent of C. Mudge, granted in 1878. These nails are provided with obliquely projecting heads, and are driven through the lower exposed corner of square-edged boards in such a manner as to leave the head exposed, so that on the next board being driven up close to the first, it will be secured by these heads. The system is probably not to be much commended, although it effects a saving of some amount of time and labor.

William L. Dolbeare in 1822 patented a waterproof floor, shown in section in Figure 6. This is composed of covering-boards, superimposed with a course of rebated planks, with an elastic, water proof material between them. The system is a good and effective one for certain positions, such, for instance, as piazza and other outside work.

The chief merit of the system of John R. Baldwin, indicated in Figure 7, is the concave-shaped recesses beneath the boards, which are provided for the purpose of permitting a current of air to pass beneath, for ventilation. It will be noticed that the connecting tongue between the joints is rounded on its edge, but this is not covered in the claim of the patent.



The only difference between the joint in Figure 8 and those in Figures 2 and 3 is in the inclined upper surface, *g*, which prevents the board from springing or rising, it being held down by the inclined surface above it. This forms a very good illustration of the rule upon which patents are granted. The improvement here, although slight, is of some practical benefit, and hence a patent was granted upon it, but only upon the improvement, for the claim distinctly limits the extent of the patent to the inclined edge. This system was patented in 1885 by Alfred Putney.

By the invention of W. I. Conway, patented in 1886, it is claimed that the doubly-inclined grooves will have the effect of producing a better plane-surfaced floor. In some cases concave recesses may be formed beneath each board to allow of ventilation, such recesses being formed of sufficient depth to permit of a current of air, but not deep enough to injure the boards. The claims on the patent allowed for and included both the doubly-inclined grooves and tongues and the concave recesses, although it is difficult to see how there is any substantial improvement on the hollow space over that of the invention of Baldwin shown in Figure 7.

The joints in Figure 10 are intended for the siding of buildings. The boards are cut away to form a watershed with an inclined nailing edge. The joint is a good one, if somewhat elaborate, and is very similar to that represented in Figure 1, the inclined nailing edge being the only material improvement which is apparent.

ARTUS.

[1] Continued from No. 592, page 208.

ILLUSTRATIONS

[Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.]

STORE OF MESSRS. J. H. PRAY, SONS & CO., BOSTON, MASS. H. H. RICHARDSON, ARCHITECT.

[Gelatine Print, issued only with the Imperial Edition.]

CUMBERLAND NATIONAL BANK, BRIDGETON, N. J. MESSRS. HAZLEHURST & HUCKEL, ARCHITECTS, PHILADELPHIA, PA.

THE building is situated on a lot 28′ 6″ x 60′ 0″, at the corner of Commerce and Laurel Streets, having an angle entrance. The materials are Carlisle red-stone up to first-story window-sills, above which are Philadelphia pressed bricks, laid in red mortar, with string-courses of Peerless moulded bricks and carved Carlisle red-stone. Cornices, crestings, etc., of galvanized-iron. The banking-room is 35′ 0″ x 40′ 0″ x 29′ 0″ high, finished with mahogany and cherry. The walls are wainscoated with panels to a height of about 5′ and has a covered ceiling. This room is lighted by two large arched windows, filled with leaded glass above transoms. The building is now nearing completion, and will cost, exclusive of vault, about $16,000.

ST. GEORGE'S REEF LIGHT-HOUSE, NEAR CRESCENT CITY, CAL.

FOR description see article on "Ancient and Modern Light-houses" elsewhere in this issue.

COMPETITIVE DESIGN FOR THE KANSAS CITY EXCHANGE, KANSAS CITY, MO. MESSRS. COPE, STEWARDSON, JOHNSON & TRUSCOTT, ARCHITECTS, PHILADELPHIA, PA.

DESIGNS FOR A CITY HOUSE.

To these two designs were awarded the highest rank as the outcome of one of the problems recently submitted to the architectural students of the Massachusetts Institute of Technology.

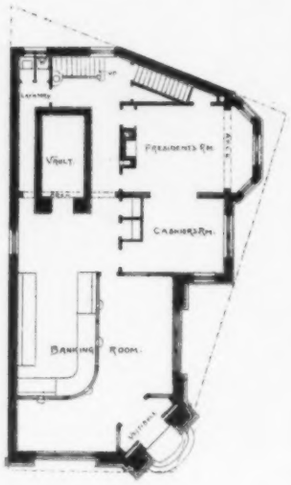
SPIRE OF THE PARK STREET CHURCH, BOSTON, MASS. SKETCHED BY MR. HENRY BACON.

TOWER OF SAN MIGUEL, SARAGOSSA, SPAIN.

COPYRIGHT 1887 BY TICKNOR & CO

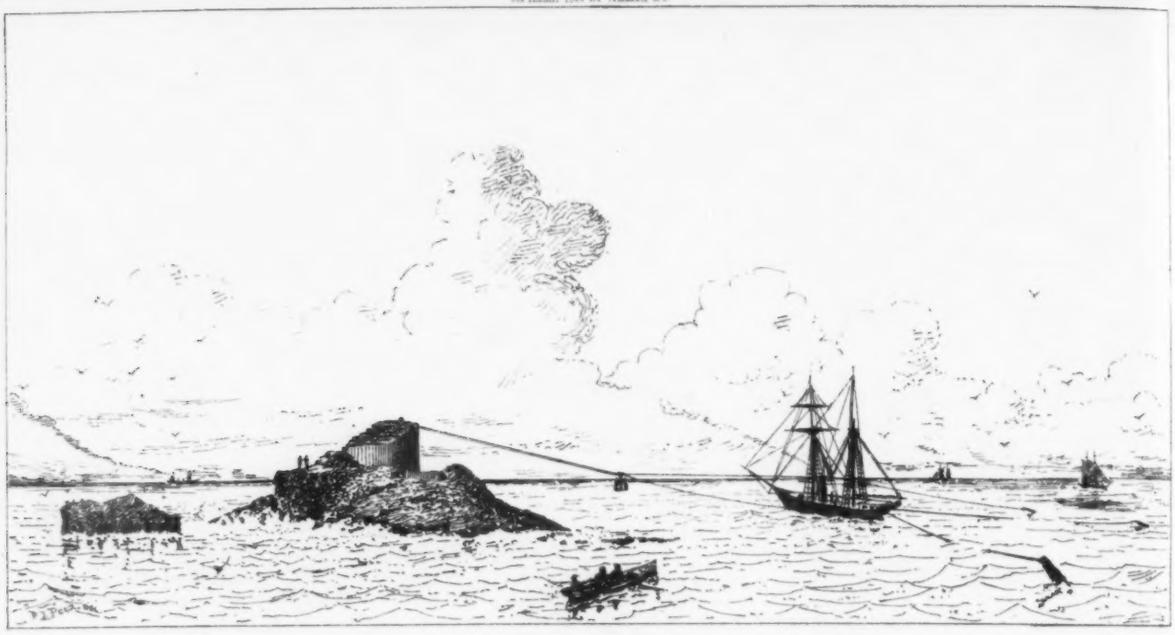
Cumberland National Bank, Bridgeton Newdersey.

* Hazlehurst & Huckel Archts. Philada. Penna.



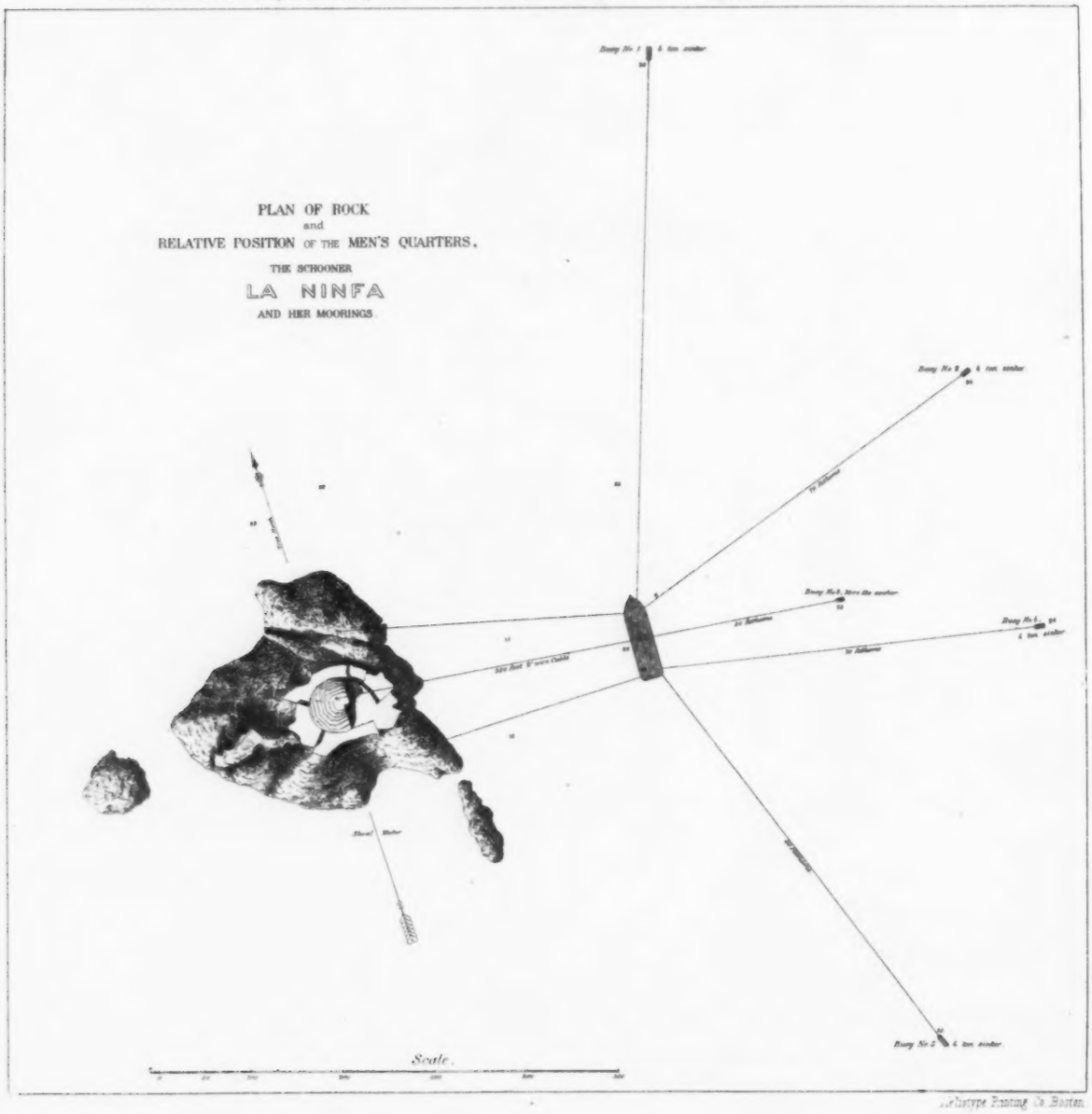
Heliotype Printing Co. Boston.

COPYRIGHT 1887 BY TICKNOR & Co.



ST. GEORGE'S REEF LIGHT STATION.

View from the South-West showing the Work as it appeared at the End of the Working Season, and the Method of Landing Men from the Schooner "La Ninfa."



Heliotype Printing Co. Boston.

COPYRIGHT 1887 BY TICKNOR & CO.

Heliotype Printing Co. Boston.

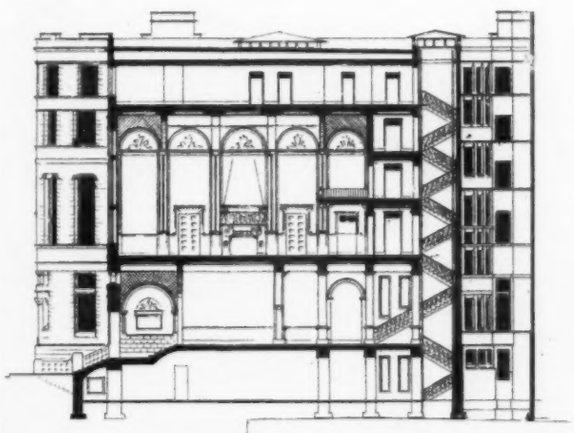
Tower of San Miguel : Saragossa. Spain.

COPYRIGHT 1887 BY TICKNOR & Co

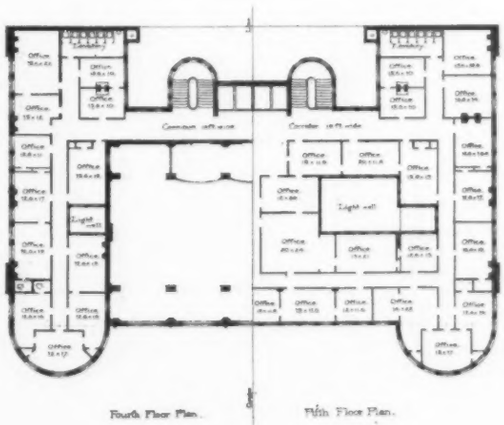
KANSAS CITY EXCHANGE.

COMPETITION.

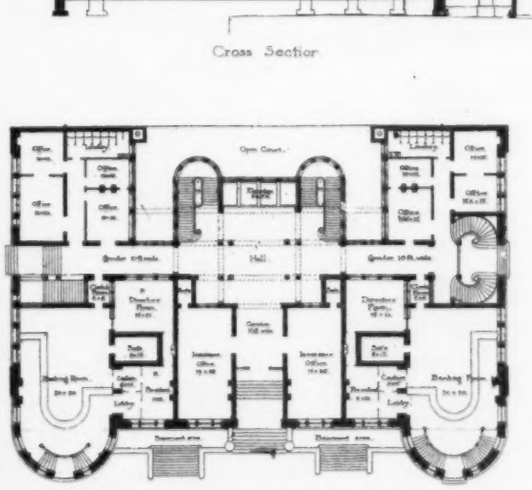
LINDLEY JOHNSON.
WALTER COPE.
JOHN STEWARDSON.
ARTHUR TRUSCOTT.
ARCHITECTS. PHILA.



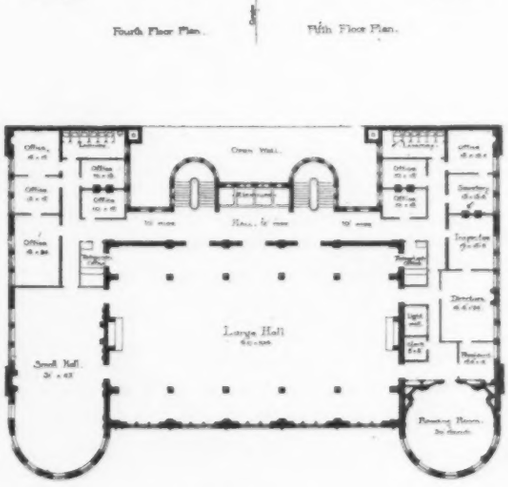
Cross Section



Fourth Floor Plan. Fifth Floor Plan.



Plan of Principal Floor.



Second Floor Plan.

Heliotype Printing Co. Boston.

COPYRIGHT 1887 BY TICKNOR & CO

PARK ST. CHURCH STEEPLE
BOSTON MASS

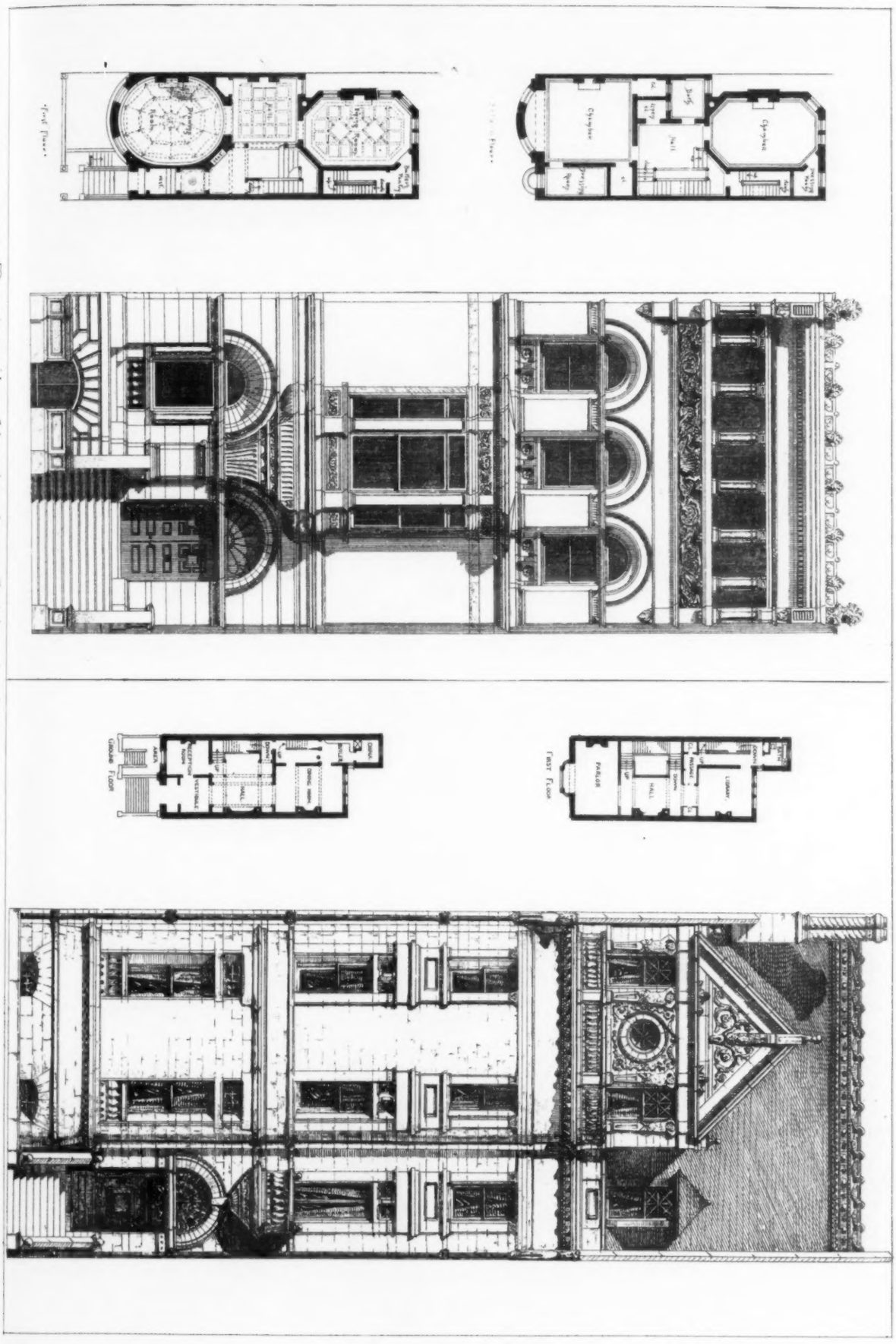
Henry Bacon Jr. Del

Heliotype Printing Co. Boston

Designs by Students of the Institute of Technology.

Heliotype Printing Co. Boston.

COPYRIGHT 1887 BY TICKNOR & CO



Designs by Students of the Institute of Technology.

VARNISHING DAY AT THE ROYAL ACADEMY.

Sketch of Beach House at Winthrop Highlands, for H. H. Hutchins, Esq. G. F. Loring Architect.

THE artists' days at the Paris and London picture-shows vary considerably. At the Academy one sees artists touching up their works, and workmen varnishing; men and women in very *negligé* attire — ulsters, "greenery-yellowy" gowns, and Tam-o'Shanter hats; the parquet floors covered up with felt; sundry pictures covered with newspaper and glazed calico; and withal, a general tone of behind-the-scenes dirt, dust and muddle, added to which a very loud smell of varnish. Here and there an R. A., but the mass of the crowd are the young outsiders. At the *Salon* the same dirt and dust and varnish, the same steps and ladders, the same general appearance of before the show, but there the likeness ends. In Paris the varnishing-day is one franc entrance to the public — formerly it was a matter of invitation to "all Paris," artistic, literary, and amateur — but the happy thought of gaining a bag full of ten-franc pieces occurred to some of the artists, and the crowd is bigger than ever. And such a crowd! "All Paris," and much beyond. And the costumes! Not "artistic," but the height of fashion. In fact, it is the Academy Varnishing Day and Private View rolled into one.

I have sometimes called the attention of your readers to the fact that the artists, or would-be artists, of the United States do wisely by going to the best school of artistic culture, to wit., Paris, for their instruction; and I have predicted that the American school of painting and sculpture will probably, fifty years hence, be far superior to the British. This year's show in London makes me more hopeful for our future; and I think it may become a fraternal race between the older and the younger members of the British family. There are a number of young men now coming to the fore that are distinctly French in training. Mr. Solomon's "Samson and Delilah" might be the work of a Prix de Rome — he may be for ought I know. It is intensely powerful in the Rochegrosse and Sylvester manner, wanting entirely in charm, but vigorous in handling, and good in color. "Delilah" might be handsomer, and the composition is confused; but it shows immense command over materials. Only compare this work with its neighbors! a whole mass of the wishy-washy schools, utterly void of any attempt at *technique*, or anatomy. Now that Mr. Solomon has shown us two years running what he can do, now that every one has been compelled to look at him, we shall be glad if he will give us something as vigorous, but less revolting than "Samson." Another school which is strong this year is what, in French, I should call the *enveloppé* — the only English word that occurs to me is a bad one — bleared. Messrs. Bramley, Forbes, Kennington, Kimley, Fisher, and Fletcher, all belong, more or less, to this set. Your countrymen, Messrs. Bridgeman and Sargent are well represented, the former by an Eastern court-yard full of sun and air, the latter by a fine portrait of Mrs. Playfair, in evening dress and an opera mantle, and an evening fête, which I like less. This picture is in one of the smaller rooms, and to see it properly is impossible — perhaps at a greater distance it would look better, but as it is hung, the light of the setting sun, and the artificial light of the lanterns are confusing. *The* picture of the exhibition will probably be Mr. Waterhouse's "Herod's Wife," (though I must remark that Sir Frederick Leighton's and Mr. Alma Tadema's are covered up.) Mr. Waterhouse's work is excellent — vigorous, rich and masterly. The other *the* picture, is Mr. Orchardson's. It is very well to ridicule this painter's habit of "canvas to let," but with less his figures would be far less effective. The husband, or "that brute," as I heard a young painter truly call him, is a marvel of impertinent easy nonchalence; and in the attitude of the girl and all the surroundings Mr. Orchardson has surpassed himself. The tone is the usual golden hue, and the painting is the usual slight work of the artist; but he is at his best, and he stands alone — no one has ever ventured to follow his ways, or, happily, to attempt to imitate him. The portrait of some lady in black, with a high collar, is the best in the exhibition; and this is saying much, for good portraits abound. Mr. Carolus Duran's full-length standing lady, Mr. Herkomer's and Mr. Holl's, are all first-rate; and Mr. Filde's is thought to be by some *the* portrait. It is splendidly painted; but I prefer Mr. Orchardson's — I have always had a weakness for the latter's style of work. It was said that Sir John Millais was so smitten with his "old-style" of painting that he was going to astonish us with a second edition of the "Huguenot." I cannot say I am at all astonished, except in so far that any one should be astonished at the new edition. The "Huguenot" in its way is perfect; and the "Yoemen of the Guard" and "Cardinal Newman" are also both perfect in their ways; but this new combination is, I venture to say, not at all worthy of the painter. M. de Blaas is another who is not so good as usual, having taken to life-size work; but another foreigner, M. Fautin, sends a charming portrait. Yet another good portrait is Mr. Skepworth's; and a quaint family-group by Mr. Marks, of Penguins, is delightful. Of course, there is a vast amount of imbecile work, by members and outsiders; but of that school the less said the better — indeed, I scarcely noted it; and equally, of course, some of the covered-up works were, no doubt, worthy. This only pretends to be a glance at the exhibition through ladders, and artists, and varnish pots.

PENGUIN.

SOCIETIES.

DECLARATION OF PRINCIPLES PRESENTED TO THE ASSOCIATION OF MASTER-CARPENTERS OF CHICAGO BY ITS EXECUTIVE COMMITTEE, IN THE FORM OF A REPORT, AND UNANIMOUSLY ADOPTED BY THE ASSOCIATION AT A REGULAR MEETING HELD APRIL 14, 1887.

TO THE ASSOCIATION OF MASTER CARPENTERS OF CHICAGO:

Mr. Chairman and Gentlemen, — Deeming it proper that you should have a full report of those matters which have occupied our attention for the past few days, and that we should not only report to you the results, as far as reached, but to some extent explain to you our reasons for our course of procedure, we present to you the following:

The facts are that a week ago last Monday the journeymen carpenters throughout the city struck work without notice to employers. A mass-meeting of contracting carpenters was held on Wednesday, and a called meeting of this Association was held Saturday night last. By mistake, and through no fault of this Association, the impression got abroad that this was also a mass-meeting, and many who were not members came, and not being admitted, went away dissatisfied and feeling that in some way they had been ill-treated. At that meeting a notice was received purporting to come from the Executive Council of the Carpenters' Union, making certain demands. This writing had neither letterpress or seal to distinguish it, and was, as you know, simply signed "The Executive Committee." It was brought by three parties, who said they were members of the executive council of the Union. We sent one of this executive committee to the executive council of the Union to ask for a written statement of their demands or grievances, over their signatures, and also to ask them for a copy of their constitution and by-laws, that we might have something to work from in our endeavor to settle the strike in the interest of the journeymen and of ourselves. They refused to make any further statement, said they had no seal, would give no other signature, and would not give a copy of their constitution and by-laws. After thus trying by all fair means to get the demands of the striking carpenters in writing from their executive council, and being unable to do so, we concluded they had no real representatives, and any demands we could get from them would be prompted by malice rather than fairness.

The advisability of advertising throughout the country for men was fully considered by your executive committee, and it was decided not to do so at present; mainly in the interest of humanity, considering it unjust to the journeymen living at a distance to bring them here when they might have work but a few days; as it has become more apparent day by day that the men in Chicago will all go back to work when they feel they can do so with safety.

We have been careful that you, and the public as well, should be kept fully informed of the situation through the daily press, and it is due the papers of Chicago to say that they have been uniformly fair, and have sought to give the facts as clearly as possible, without exaggerated or sensational features.

We have, in considering the present crisis, and the speedy settlement of present difficulties, gone farther and tried, as far as possible, to lay such plans as would make any settlement that might be arrived at permanent and lasting. We would urge upon you the wisdom and necessity of this. We believe that mistakes have been made by this Association in that we have allowed ourselves to take action that has been construed to mean that we deny the journeymen the right to organize. This is a right that lies as a fundamental principle of American liberty, and belongs to all men and classes of men. What we have meant is that we deny the right of any man, or class of men, to seek to abridge or govern the freedom of action in another, and this principle we can neither violate ourselves or allow others to take from us.

We must, therefore, settle this difficulty upon the broad principle of right, both for our own interests and for those of the journeymen. Our interests and theirs are not antagonistic, but are mutual. We are all workmen together, and we can never disagree without doing equal injury to both.

These are, as we have said, some of the results that have come from four days of the closest study of the situation, its present aspect and future needs. We have thought that before we went any

farther, in order to prevent mistakes, and that we might have a line to follow that would be plain, the right of which would be incontrovertible, we propose to you the following resolutions, hoping that after careful deliberation that you will accept them as a declaration of the principles of this organization, and from which, in all our actions here or in future dealing with the journeymen carpenters, there can be no deviation. Holding, as we do, that these resolutions sustain and protect the rights of our workmen as well as of ourselves, and that their passage and recognition will give to the journeymen a greater freedom than they have yet enjoyed, and will enable them to see exactly how we stand, they will also give to the public the assurance (which, at this critical moment, is extremely necessary), that we are level-headed business men, and not hot-headed cranks. The resolutions are as follows, and we ask your earnest attention to each section:

As we think the journeymen reasonable men, willing to repair a wrong committed, and acknowledge undoubted rights, be it

Resolved, That the Master-Carpenters will, as a preliminary to any negotiations with the Carpenters now on strike, require that the men now on strike without notice to their employers, agree to resume work at the following scale of wages, to be agreed to by employers and employés, viz:

Eight hours to constitute a day's labor at 30 cents per hour and upward according to the skill or efficiency of employés.

Resolved, further, That the Master Carpenters lay down the following rules as a declaration of principles, as the unquestionable rights of employers and employés, upon which there can be no arbitration or question. These rights to be conceded by both parties before any further action is taken looking toward a final settlement of differences for the future.

Rule 1. The right of the employer to employ and discharge employés whether belonging to the Carpenters Unions or not.

Rule 2. The right of the employé to work or not to work with non-union men.

Rule 3. The right of the employer to hire unskilled labor that will suit his purpose at any price at which he can get it.

Rule 4. The right of the employé to get the wages he demands, or not work.

Rule 5. The right of individuals to associate for all honorable purposes.

These rules lie at the foundation of all liberty of action, and must be recognized before any prudent business man will invest capital in any enterprise requiring the employment of labor.

Respectfully,

W. H. Woodard,
Jonathan Clark,
John Ramcke,
Sam'l H. Dempsey,
Francois Blair,

Executive Committee, Association of Master-Carpenters of Chicago.

BOOKS AND PAPERS.

One of the commonest idiosyncrasies of human nature is the unwillingness that men have to look on both sides of a question. How many ardent Republicans, for instance, can tolerate a Democratic newspaper, and how many good believers in Orthodoxy would read a Unitarian Sunday paper? And yet, what is probably more common than for these bigots to proclaim their inability to understand how it is that laboring-men can pursue their wrong-headed policy of strikes, riots, starvation, and loss of money, in the face of the evidence of the hard facts of the past, and in spite of all the arguments that the observer of sociological movements can shower upon them in the columns of the daily papers.

The simple fact is that just as the exhortations of the good Republican are not heard within the lines of the Democratic camp, so the workmen rarely see the words of commonsense and real wisdom that the rest of us see every day, and find so obviously convincing. Like a good many other people, the workman will read and listen to only those words which state his side of the case as he likes to have it stated, and he finds plenty of papers — whose very existence is unknown to his employer — which will cater to his views.

In many ways an uneducated, or imperfectly educated man has to be treated like a child which is given unpalatable physic, for its own good, that is, as the preconception is difficult to remove a harmless disguise must be adopted, — the pill must be sugar-coated.

It is not much in our line to speak of novels, but as many of our readers are large employers of labor and may, at any time, have on their hands a contest with organized labor, the majority of whose forces are disbelievers in the course of action into which their leaders and the minority have forced them, we think it well to draw their attention to this book which, it seems to us, is just the sugar-coated pill that could be administered to the workmen either in homœopathic doses by placing a single copy in the mill-library or the reading-room of the association, or allopathically by using it as a tract, and distributing copies, broad-cast, to all the workmen in a given employ.

The book[1] is one which has action enough to pass simply for a novel such as are written for summer reading. But it is more than this; it is a novel with a purpose, and that purpose is a fair consideration of the great labor movement of to-day and the chances of success that attend the directors of the Knights of Labor. A novelist makes his puppets act and speak in furtherance of his own views, but this author does not seem to have used his privileges unfairly, but tries to give both sides of the matter a proper presentation, as the following conversation between the superintendent of the mill, whose operatives have just struck, and the representative of the labor organization will show:

"Mr. Darragh," said the superintendent, as he entered the office, "I am glad to see you — and you alone. From what I know of you, I believe we can settle this matter, and have the men back at once. Provided," he added, "than I can induce the directors, who have taken this matter in hand themselves, to waive their principles, as some seem to regard the matter, and allow a settlement with your organization."

"I hope they will do so, I 'm sure," said Darragh, cordially. "They tell me — those men who seem to know — that if your advice had been followed in the past, there would have been no occasion for a strike here."

"How do you like our scale of wages?" he added, after a pause.

"Well—but sit down, sit down," said Mr. Malcolm. "The schedule?" he continued; "I do not regard it as unreasonable. If you'll shade down the back-boys and helpers — make that half a dollar a week less, I should say — and if you do not insist upon your peculiar method of equalizing those machine-shop wages, I have little objection — by the way," he said, interrupting himself, "in that machine-matter, I might as well say that I am entirely opposed to anything that tends, even in a slight degree, as here, to put a poor workman on a par with a better man. Your schedule there makes a very few dollars a week difference to us, but I hate the principle of it. A good workman ought to have exactly the difference in pay over the unskilful and lazy one as the ratio of his work is to that of the other, in quantity and excellence. Their being at work the same number of hours does not go for much in a machine-shop. There is no piece-work there, you know."

Darragh looked thoughtfully at the list that he was holding in his hand.

"This," he said, finally, "is one of the ways in which our order sometimes works injustice. I am only reconciled to it on the principle of the greatest good to the greatest number. You had better let it go, or, I fear, we shall have a strong kick against our settlement." . . . .

The superintendent twisted his chair around, and thought a moment or two.

"Well," he said, slowly, "if the men are fools enough to stand it, I do n't know that I ought to fight for them against their own order — but there is one thing more. Is there to be any trouble about the 'scabs,' as your brethren pleasantly style them? They comprise nearly three hundred men and women, and we do not propose to discharge one of them."

Darragh threw his head back, running his fingers through his thick, black hair, and presently answered with some deliberation.

"With regard," he said, "to the proper attitude of our order on this question, I am very clear. Our best men also," he added modestly, "have given the subject a great deal of thought, and are satisfied that nothing can ultimately work us more injury than to assume a hostile position toward those who do not choose to join our ranks. For a time some may be intimidated and driven in, as it were; but such recruits are of little value. Too many are already in the organization who sadly fail in understanding its high purposes, and seek to pervert it to selfish and unlawful ends, without adding to it members who shall sow discord to be reaped hereafter —"

Mr. Malcolm here interrupted him, speaking in his usual slow manner.

"Your order has in itself now," he said, "the seeds of dissolution. It cannot last. None of you with any self-respect can long endure its tyrannical interference in your private affairs. The thing is an anomaly in a free country — an *imperium in imperio* — that can have but a brief existence here. It is bound to fall to pieces of its own unwieldness, or be shivered to atoms by a storm of public disapproval, both within and without its ranks, when its full significance and baleful workings shall more fully develop themselves. Excuse my warmth, but I think your order is doing great mischief."

Mr. Darragh heard him with admirable temper, and answered quietly, "Certainly: there is some ground for your strictures upon us, I regret to say. All associations, of this or any other character, must share in the imperfections of the men who compose them. No movement for the amelioration of the condition of a large class of the people can be conducted without more or less incidental friction, and the infliction of temporary hardship upon many, perhaps. But, Mr. Malcolm, unless you fully grasp the ultimate objects of this association, which are to elevate the laboring man, and broaden and ennoble his life, these incidental objections are seen by you out of all proportion, for you do not understand us at all."

"How?" exclaimed the superintendent. "Do you mean to say that these boycotts and the violence, injustice, and cruelties that your people are constantly practising are to be looked upon as mere 'incidentals' of some far-seeing policy of self-elevation and improvement? They are your methods, sir, not incidentals; and no such methods can lead to those high results."

"Violence," returned Darragh, warmly, "or lawlessness of any kind, the order strictly forbids and seeks to restrain" —

"I don't know about the forbidding," interrupted Malcolm, "but I do know about the not restraining."

"We do our best, sir," said Darragh.

"Well," said Malcolm, "your 'best' has been very bad indeed, so far. You seem to have discipline enough to successfully order free citizens to stop work, but you are not able to make them behave themselves like men — or you don't wish to — one of the two."

"I think you do us injustice, sir," said Darragh. "Our principles are opposed to all illegal methods. Boycotts are only permitted in extreme cases. Strikes we order, it is true, but always prefer to settle

[1] "*The Strike at the B—— Mill.*" A Study. Boston: Ticknor & Company, 1887. In cloth, $1.00; in paper, 50c.

matters without them. Do you not see, Mr. Malcolm, that to lift the laboring man, to improve him intellectually and morally, we must improve his material environment; help him to the getting of larger wages, and more leisure for self-improvement. But it is difficult, I presume, for a capitalist to feel as I do about this."

"Mr. Darragh," replied the superintendent, "I am now, to a certain extent, a capitalist. But I have been a day laborer, and do not forget it. My sympathies are all your way, whatever you may think about it. But your claim is an impossible one. Many desirable things are denied in this life to most of us; and before you bind together a number of hundred thousand men, with this ultimate purpose, and through such association bring upon many of them hardship, suffering, and disappointment, is it not your duty to be tolerably sure that the economic conditions of the country — of the civilized world, indeed — will admit of these radical changes? You cannot do these things by edict, beneficial as they may be. The laws of supply and demand are inexorable, and the minute you begin to force a change in them by law, or by a movement like yours, that minute the quick destruction of many industrial enterprises has begun. What the end shall be, if you persist, you can foresee as well as I. Where will be the advantage to a man of large wages, when he can find no employment; and will your people desire an eight-hour rule, when every hour of the day will be at their disposal for want of occupation? Look ahead, man, look ahead."

"The question is not altogether free from difficulties, I am aware," said Darragh. "But we must strive for the best. We can but try, and if we fail it will not have been our fault."

"Yes, Mr Darragh, if you, the men of intelligence, go ahead blindly, and mislead a host of people with sloppy rhetoric and vain hopes, and leave them worse off than they were before, it *will* be your fault. You ought to be fairly sure of your ground. You have no right to make experiments that involve so much possible injury."

Darragh colored, and his eye flashed. He arose from his chair and walked a moment up and down the room. Then, controlling his feeling, he said, almost pleasantly: "By the present strike, at least, Mr. Malcolm, we are likely to have the men back at work in a few days, with a material gain, if we agree, as I suppose we shall, when our discussion is over."

"Yes," said the superintendent, "we shall agree about the wages. But my directors must endorse my action, and your people, I take it, must back up your very sensible notions about the non-union men. When this has been done, you can indeed congratulate yourself upon one of the very few successful experiments of your order in righting a wrong."

"You admit that there was a wrong for us to right?"

"Yes, as prices go now; you are quite welcome to that admission. But we have gone to our limit. If your folks strike again, as they logically must, some time, in order to make progress toward the goal you point them to, they cannot be successful. We can pay no more and live. Indeed, it is a problem as to how long we can pay this. Your strikes have forced a few men, here and there, to pay more than they can afford; but they cannot hold on very long. Most of those strikes have failed, however. And all fail when, as in the majority of cases, they hold out on some absurd point outside of the question of wages or hours."

"*Those* strikes ought to fail," said Darragh.

Mr. Malcolm rose from his chair. "We have had a long discussion, Mr. Darragh," he said. "I respect the desire you have to benefit the people, but regard your hopes of what you can do in this manner as in the highest degree chimerical. Meanwhile, I cannot help adding that, while your order may gain an incidental advantage, now and then, the mischief you are working and will work to your own people, before this organization goes to pieces, is incalculable. In your experimental striving for the best, as you call it, you are marking off into a distinct and inferior class a large body of the citizens of a free country, to which I came, and in which I had a chance to better myself, because there were no classes. You are destroying their independence and crushing out their individuality. The 'Associate of Toil' can only stand on a dead level with his fellows, though it may be he is their superior in brains and pluck. From a free and untrammelled citizen you are transforming him into a mere unit of labor. All this in addition to the untold misery and trouble that these movements entail to him and those dependent upon him."

"You do not justly estimate us," said Darragh. "We must be judged by results. Have not the trades-unions benefited the English workman?"

"Yes," replied Malcolm, "though the extension of the suffrage there has done far more. But it does not follow that your organization is to do good here. The conditions are essentially different. Because the Russian peasants need reforms, does that justify the mountaineer of Switzerland in raising the devil with his free institutions? Associations like the Carbonari, or the Vehmgericht of the Middle Ages, may have served some good purposes, in their villanous way; but what do we want of them here? You cannot generalize about these things. What may be beneficial in one period, or in one country, becomes an absurdity and a menace to society in another. In the broad light of American freedom your order cannot endure, but will die like its wretched prototype, the Molly McGuires of Pennsylvania."

"Well," said Darragh, "that very light must act as a check, and will prevent what you seem to fear. We can restrain injudicious leaders, for the men have too much sense to follow them; neither can they go in for this nonsense about scabs and boycotting. We mean to be no check upon individual enterprise, and only wish to elevate all together without menace to liberty or disobedience to the laws of the land. If the order can be conducted as its best friends wish, I believe — yes, I fervently pray — that it will yet effect much good." He paused a moment, and his face showed some emotion. Presently he added: "I shall report to our meeting to-morrow night. I have confidence in our people, and believe they will vote to accept our settlement and go back to work if your directors allow of it."

We had intended, but lack of space forbids it, to quote also the conversation which occurred some time after the collapse of the strike, during which Mr. Darragh acknowledges with sorrow that the attempt to elevate the working man by the aid of a system of which strikes and boycotts were chief factors was an impossibility; that the earnest and well-meaning men were leaving the organization, and that the demagogues had got the upper hand and were bringing wrack and ruin upon the boasted labor organization.

ONE thing strikes the traveller in foreign parts, and that is that there must be some connection between the costume of a people and the architecture amidst which they dwell: at any rate it is observable that where there is a national costume there is generally a national architecture, and the costume seems more appropriate to that style of architecture than it would to any other. Indeed, it seems that if one were given a series of fashion plates, showing the national costumes of all the peoples in the world, and another series of plates showing the national types of architecture, it would be in most cases a simple matter to assign with certitude a given costume to its appropriate house. National costumes are affected mainly by the lower classes, and it is in the buildings occupied by the lower classes that the true types of the national architecture are to be found. As the worldly condition of given individuals improves they abandon the national costume, and in like manner the buildings they inhabit become less national and more cosmospolitan. Advancing another step, we find that as a nation becomes more civilized or more sophisticated, we will say, it abandons both the national costume and the national architecture at the same time. Perhaps the eclecticism in architecture which is more apparent in English-speaking races than it is elsewhere, may be due to the fact that they have no national costumes. Can anything be more lugubrious than a crowd of Englishmen or Americans in their sombre and unpicturesque garb, which somehow always suggests that the rite of "tubbing" is practised only by the upper classes, and that if one wishes to avoid contamination he must keep out of the crowd? The idea of uncleanness does not associate itself so closely with crowds who wear bright-colored and shapely clothes, though it is very possible that the homes where these gaudy individuals dwell may be less sanitarily wholesome than those which house our own dingy multitudes.

Personal cleanliness is in no small degree practised in the East by those who uphold the Mohammedan and affiliated doctrines, and there seems some little absurdity in the idea that an architecture suited to a race which rejoices in white turbans, robes and other washable wearing apparel should be thought suitable for English-speaking people who, we fancy, have among them an unusual portion of the "great unwashed," clothed in dingy and untidy woollen garments. On this view of the case it does not seem as if Mr. De Forest's book[1] of plates of Indian architecture were likely to be of great service even to our most eclectic architects, whose one idea in buying a book is to buy one which they can use — that is, crib from direct.

How out of place Indian architecture would be if bodily transplanted to this country may be imagined if one supposes the three natives shown looking out of the windows of the house in the Bazaar Amaritza replaced by any three of our own citizens with heads covered with the silk hat, the billy-cock or Panama. The proprieties would indeed be shocked.

But it is not necessary to copy baldly to derive benefit from such a book as this. Neither in taking inspiration from it is it necessary to go to the same extreme of elaborate enrichment, which would almost inevitably call into undesirable activity the jig-saw and glue-pot. To us it seems as if the true mission of the book were to suggest how much our somewhat sad and certainly prosaic lives might be lightened and brightened if they were passed amid architectural forms which had a lightness and gaiety of their own, which must react on the ephemeral creatures who live amongst their longer enduring forms. If the barren stretches of brick fronts in Philadelphia were to be replaced by façades designed by Indian masters, is it not supposable that the inhabitants would lose some of their Quaker sedateness and apathy, and discover that there were more enjoyable ways of living than that of rolling along smoothly in the same groove! Already our daily lives are affected, brightened, perhaps elevated by the change the artistic movement of the last few years has wrought in the interior of our dwellings, and though the transformation of our street architecture with its correspondent action must be an affair of years, we are already profiting by the achievements of artists of other times and races who have taught our artist-decorators how to embellish the interiors of our dwellings, even though we have not the means to apply analogous methods to the treatment of their exteriors. It is to the interior decorators that this book of fifty plates will be most useful, and though black-and-white is, in some ways, less satisfactory than color, it offers a safer source of inspiration.

We could wish that Mr. De Forest had written more at length concerning these excellent photographic prints — and where a book costs as much as this the purchaser should get the fullest possible return for his outlay; a little more information concerning the materials used and the method of construction would have added greatly to the value of the book. It is simply an aggravation not to be able to determine from the prints whether the materials are wood, stone, stucco or clay, and whether the decorations are applied color or inlaid in colored wood and stones. All we are told is that

[1] "*Indian Architecture and Ornament.*" By Lockwood De Forest. 50 quarto Heliotype plates. Boston: G. H. Polley & Co., 1887. Price $25.00.

teak-wood is a wood of wonderful endurance, and that, in it work of every degree of fineness can be executed, and that "shish" work is a kind of mosaic-inlay much in use in some parts of India, the peculiarity being that the inlaid pieces are cut from globes of various-colored glass, which are then set and combined so as to produce on walls and ceilings a display of color both brilliant and harmonious.

The views shown are rather unusual in that more regard was had for domestic than for ecclesiastical or public architecture; so that in the two doorways of the houses at Multan, the two bay-windows of the houses at Ajmir we have offered *motifs* which can be easily adapted to our American façades by those who like to do such things.

The subjects, as a rule, are well selected, and the reproductions unusually successful. Rarely does one see a more perfect print than the one which shows the interior of the palace at Delhi, which does not have the hard and unsympathetic perfectness of the print of one of the bay-windows at Ajmir. The Shet Huttusing Temple at Ahmedabad is another example of artistic photography. The plate which is, perhaps, the most interesting, architecturally, is also the most imperfect in the book: it shows a portion of the façade of a brick house at Lahore, and the peculiarity of the construction is that the window's heads are straight brick arches which, after the brickwork had become set, seem to have been cut into any arcuated form that struck the fancy of the designer.

Altogether the book is a more valuable and interesting one than that which Mr. De Forest produced a year or two ago, and of which we wrote in the issue of September 12, 1885.

COMMUNICATIONS

RABBET OR REBATE.

New York, April 29, 1887.

To the Editors of the American Architect:—

Dear Sirs,— Please state in some issue of the *American Architect* which of the following terms is correct: rabbeted or rebated jambs.

By so doing you will confer a favor on A Few.

[Authorities differ about these words as they do about the verbs "to slake" and "to slack." Every-day usage is rather in favor of "rabbet" and "slack." — Eds. American Architect.]

ECONOMY IN DOMESTIC COOKERY.

Boston, May 3, 1887.

To the Editors of the American Architect: —

Dear Sirs, — I am constrained to believe that the improvements which I have made in cooking apparatus will ultimately prove most beneficial to people of small means rather than to others, but they may come into use sooner among prosperous persons than among the poor; they may then gradually find their way down to the points where they will do the most good. I think that I myself did not realize the full meaning of these improvements until I invited my Whist Club to an "Aladdin"-Cooker dinner-party on Saturday last. I may venture to give the bill of fare, which was promptly served and was very much approved.

The several dishes which were served on this occasion were prepared in the kitchen without any other instruction than a memorandum from myself as to the time to be given to each dish; they were cooked without any special supervision except that of two excellent women of average intelligence in our service — the work was done partly in the pantry and partly in the dining-room, without any odor of cooking of any objectionable sort, and without any heat more than that developed by a common kerosene lamp; the expenditure of fuel did not exceed two quarts of kerosene oil — I think not as much, worth five or six cents; perhaps worth less if oil is bought by the barrel.

The quantities of food were substantially as follows:

10 pounds of sirloin of beef.
10 " leg of mutton.
4 grouse.
A large apple pudding.
3 loaves of bread, full size — the customary family loaf.
3 loaves of cake.
Sundry vegetables not measured.

Suffice it that the quality was indicated by the remark of an English friend who dined with us, that "the mutton was equal to the four-year old grass-fed mutton of England, and was the only leg of mutton that he had eaten in this country which approached that kind in its excellence."

The number of persons who partook of this dinner in the household was sixteen; what remained served for the dinner of twelve people on the next day.

The two devices are:

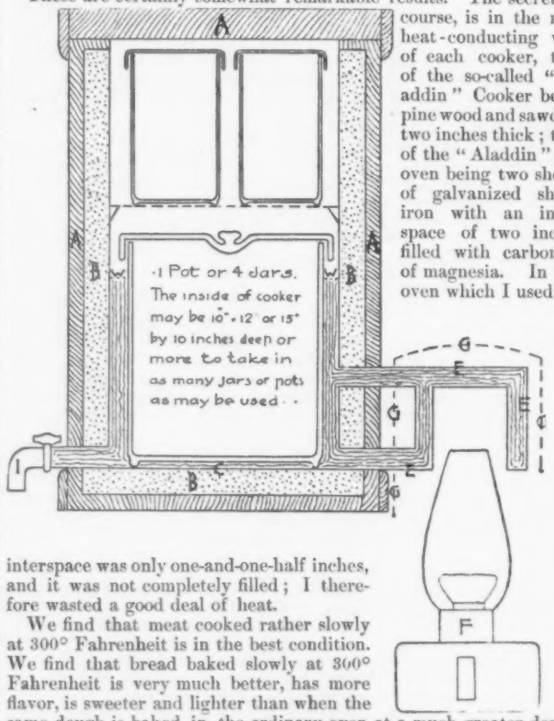
1. The "Aladdin" Cooker in which the food to be cooked is first placed in porcelain jars or pots, either with or without water or other liquid, and seasoned or not, according to taste. These jars are covered substantially air-tight, and are immersed in water by the circulation of which the heat is imparted. The diagram[1] will carry its own instructions.

The improved "Aladdin" as now made by Mr. A. W. Westgate, of Mattapoisett, is two-stories high. For the dinner-party named the leg of mutton was placed in a large porcelain pot in the lower part of the apparatus. A lamp was made use of of sufficient capacity to cause the water to boil, which causes the meat to simmer slowly in its own juice. The mutton was simmered four hours. One hour before serving, jars containing vegetables were placed in the upper story where they were cooked by steam. One large cooker was thus used, a small, one-story cooker for the grouse.

The "Aladdin" oven, so-called, is an oven in which the heat is imparted directly from the lamp to a space between an outer oven, the walls of which are filled with a non-conducting material, and the inner oven, made of sheet-iron or sheet-copper. The size of the oven which I used was substantially like that indicated in the enclosed diagram. I have made such changes in the arrangement in the diagram as will probably make this a better oven than the one which I used. In the hot-air oven three loaves of bread and three loaves of cake were baked in the morning. The large apple pudding, known as a "pan-dowdy," was also put in in the morning. The bread and cake were taken out when fully baked, the pudding being left in. Four hours before dinner the sirloin of beef was put in to be roasted; and at the proper time before serving, vegetables and macaroni were baked in this oven.

The lamp used with the "Aladdin" Cooker was the common "entry lamp" which is commonly used to light the hall, fitted with what is known as the "Sun" burner. The lamp used with the dry oven was a lamp commonly used with kerosene stoves, with a wick six inches wide. About one quart of oil was used during the day, a little more the night before in preparing the soup. The soup was prepared in the "Aladdin" Cooker the night before; the carcass of a turkey which had been roasted in the dry oven for the previous dinner was placed in a jar and simmered all night.

These are certainly somewhat remarkable results. The secret, of course, is in the non-heat-conducting wall of each cooker, that of the so-called "Aladdin" Cooker being pine wood and sawdust two inches thick; that of the "Aladdin" dry oven being two sheets of galvanized sheet-iron with an interspace of two inches filled with carbonate of magnesia. In the oven which I used the interspace was only one-and-one-half inches, and it was not completely filled; I therefore wasted a good deal of heat.



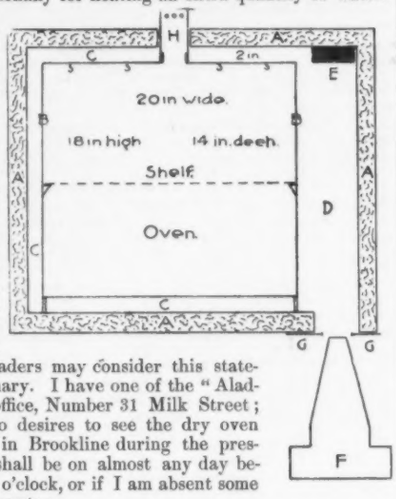
We find that meat cooked rather slowly at 300° Fahrenheit is in the best condition. We find that bread baked slowly at 300° Fahrenheit is very much better, has more flavor, is sweeter and lighter than when the same dough is baked in the ordinary oven at a much greater degree of heat.

The general verdict in regard to the food prepared in these two ovens is that it is more juicy, has a better flavor, and is in every way better than when cooked in the ordinary way. This is especially true of game and birds, simmered slowly.

I have made a small addition to the kitchen of my summer house by constructing a small room in which there is a brick table, on one end of which will be built a broiler or grill to be worked with

[1] A, one-half to one inch pine; B, one to one and one-half inch sawdust; C, copper lining; D, copper cover, one-half inch, filled with sawdust; E, copper duct and cylinder, in which water circulates, heated by F lamp; G, tin guard to prevent radiation and to protect wood from heat; I, faucet; H, one or more pots, jars or tin pails; W, water in circulation outside the pot or jars; W', water level.

charcoal; at the other end a place for two cookers. I can see no reason for making use of the cooking-stove during the ensuing summer unless it may be occasionally for heating an extra quantity of water.



It is my intention to alter my winter kitchen in Brookline by adding thereto a suitable place for this apparatus, depending upon the furnace to keep the kitchen warm.

The attention required by this apparatus, after the food has been prepared and placed in it, is only that needed to take the dishes out at the proper time; while *in* the ovens absolutely no attention is called for.

I fear that your readers may consider this statement somewhat visionary. I have one of the "Aladdin" Cookers at my office, Number 31 Milk Street; and any architect who desires to see the dry oven may call at my house in Brookline during the present month, where I shall be on almost any day between five and seven o'clock, or if I am absent some one will show the apparatus.

I believe this apparatus has great use; that it will promote economy and prevent dyspepsia.

I have stated to some of my friends that the epitaph which may be placed on my monument will be that "He taught the American people how to stew."

I trust that these statements may interest your readers and may lead to improvement in cooking-apparatus with a view to saving heat, by which so many kitchens are made intolerable, especially in the summer.

I can see no reason why the devices adopted in these two movable ovens should not be applied to permanent ovens built into the house and so prepared that ordinary lamps may be used in connection with them, in place of the wasteful consumption of coal now so much to be deplored. If such permanent ovens were thus constructed in connection with the chimneys of a house, the last objection would be removed; the vapors from the consumption of the oil in the lamp would pass up the chimney-flue, although there would, of course, be no smoke. Moreover, if any one fears the least danger from leaving a kerosene lamp burning all night, the chamber for holding the lamp might be made in such a way that even if any accident occurred no harm could happen. It is in this way that I shall arrange for the permanent adoption of this apparatus in my own family.

I have referred to these inventions in cooking as my own. So they are, in one sense. I invented them, but there is nothing new under the sun. It had seemed incredible to me that so simple a principle as that of preventing the radiation of heat by making the outer walls of a portable oven or stove of non-conducting material, should have been overlooked. After I had published the mode of constructing the "Aladdin" Cooker, I received a copy of a pamphlet on penny dinners which are furnished to school children in New-Castle-upon-Tyne, under the supervision of the Rev. W. More Ede; and there I found a description of a German invention which Mr. Ede had made use of, corresponding almost exactly to my own idea, only in this case the apparatus was a fixture of a large capacity heated by gas. I borrowed the idea from the Norwegian cooking-box, adding the circulation of the water and the lamp.

In regard to the second invention of the non-conducting wall in connection with dry heat, I concluded to apply for a patent in order that it might be introduced more rapidly; and then I found that the identical invention had been made and patented by a Mr. W. Goddard, in 1831, only he derived his heat from a small charcoal furnace. Of course, this patent has expired, and the device is now public property. The fact is that inventions that have heretofore been made, but which were impracticable, are now subject to use by the application of kerosene oil or cheap gas in place of a solid fuel.

But again, both these inventions are crude. A professional stove-maker could doubtless very much improve the construction of the oven by giving special direction to the current of heat. In my simple device the heat of the upper chamber is greater than that of the lower; the heat of the end next the lamp is greater than that at the other end. The average heat is easily carried to 300°. The variation of heat is rather a convenience than otherwise, as my cook has found out. In another oven on the same principle I have raised the heat to 450° with a Florence lamp carrying a four-inch wick.

Again, when I cooked twenty-five to thirty pounds of food for my Whist Club dinner the percentage of waste of fuel was something enormous, although the cost was less than six cents. All that I utilized was the heat taken from the top of the chimney; the potential of the oil must be vastly greater. When one considers that a cube of coal of a size that would pass through the rim of a quarter-of-a-dollar would drive a ton of cargo with its proportion of the weight of a steamship two miles on the ocean, one begins to realize the enormous waste of fuel in cooking and in the work of the household. I think the proportion of kerosene oil to thirty pounds of food ought not to be more than one cent's worth, and I do not believe it will be more than that when practical stove-makers have taken up these crude ideas of my own and have developed them as fully as they may be. I will, therefore, set as the objective point or standard for inventors: to improve this apparatus so as to use a quantity not exceeding one cent's worth of kerosene oil for thoroughly cooking the daily food for a family of ten persons. This will be considered as visionary as the statement which I made in 1882, that the introduction of the system of ensilage for feeding cattle would alter the equation in this way — "where it had been one cow to four acres it might become four cows to one acre." I have lately received a statement from Mr. George H. Gilbert, of Richland, N. Y., giving facts: he states that he fed sixty-five cows this last autumn and winter for seven months on the product of corn-stalks raised on fifteen acres of corn land, giving them, at the same time, not exceeding five cent's worth of grain per day, raised on other parts of his farm; he intends next winter to make beef on ensilage only, carrying the corn for the silo in the field up to a rather more mature growth than is corn when it is cut as a green growth only.

The more one investigates the food question in this country the more apparent it becomes that the waste of food and fuel is greater than that of any other element of subsistence.

My final conclusion is that if the average daily ration of the people were reduced to its most wholesome, nutritious and digestible quantity, but yet in as great variety as that now consumed or wasted, the difference accumulated would be equal to the entire annual sum of the additions to the capital of the country now made in any one year. In other words, the waste of food and fuel to-day is equal to the entire net profit upon the product of the United States. This may be readily believed when the equation is stated as follows:

Population 60,000,000 at five cents a day each, *wasted*, comes to $1,095,000,000. Deduct on infants $95,000,000. Net loss from bad cooking and waste, *one thousand million dollars' worth of food and fuel per year.*

EDWARD ATKINSON.

[1] The concentration of heat is greatest at the top; perhaps it would be better to make the top of the outer oven thicker, so as to check radiation more. A A A A, double metal wall filled-in with a non-conductor, two or three inches, carbonate of magnesia or infusorial earth (*not* asbestos, as it is a good conductor of heat). The door of the outer oven should be made the same as the wall, two to three inches thick. B B, sheet-iron or copper oven. C C C, circulation of hot air around all sides of inner oven. D, flue to receive hot air. E, brick or iron, to protect sheet-metal from heat. F, square cooking-lamp, or common "Sun Burner" — lamp such as is used for lighting. G G, slides to close the lower opening, more or less — cut in two parts, so that one or two lamps may be used at one time, the rest of the opening being closed if only one is used. H, ventilator to the cooking or inner oven. Can be made on orders by Kenrick Brothers, Brookline, Mass.

THE DESIGN FOR THE DETROIT POST-OFFICE.

BOSTON, MASS., May 10, 1887.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — In the Boston *Post* of this morning in a "special" from Washington, the Supervising Architect of the Treasury is represented as saying that a recent article in your periodical was instigated by myself. Such an accusation is as injurious to you as to me, and though personally — to my loss — unknown to you, I am certain you will take an early opportunity to repel it.

Very respectfully,

CHARLES EDWARD PARKER.

[WE could not have supposed that any one who had before his eyes the design for the Detroit Post-Office could imagine that we needed any "instigation" to speak as we did last week of that piece of official eccentricity, and so it never occurred to us that any one could imagine that we were pulling wires for any one. Neither Mr. Parker nor any individual outside of this office asked us to speak as we did. We are exceedingly sorry for Mr. Bell as an individual that our remarks had to be unpalatable, but we cannot extend the same sympathy to Mr. Bell the Supervising Architect. Our object — the only one we had in view — will have been attained if we have sufficiently attracted attention to this important branch of the public service to bring it about that in future the designs for Government buildings shall not be prepared in the Government office, and that henceforward the duties of Mr. Bell or his successor shall be purely administrative. To properly perform the functions of a good clerk-of-works toward all the buildings the United States is now building will take all the time, skill, and energy of a very capable Supervising Architect." — EDS. AM. ARCHITECT.]

CHICAGO, May 9, 1887.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — I have become aware that there was an adverse smile against Mr. Bell's design for the new Detroit Post-Office, but until to-day I have only been able to see the smile of derision. Now you have given it to us, and I cannot resist the Unitarian right to ask you *why* is it an "abomination," "inexcusable misemployment of time," "absolutely discouraging," etc., etc.? Watching the architectural gyrations as they have occurred in this country for the last twenty years, I venture the assertion that, if you ask, through your valuable paper, the opinion of the profession throughout the country you will find a fair majority that will call it good, and I know of no way in which you can more thoroughly aid in the advancement of the architects than by setting a "pro" and "con" ball rolling on this very design, as it now has taken the plainest of adverse criticism. I believe that men whose opinions are valuable will disagree with you.

I write for two reasons: 1st, to voice an honest conviction that the design named is infinitely superior to many of the post-offices of the

country. 2d, In the hope that you, in your able way, will answer Why? and that the most able of the adverse critics will come to your aid.

Yours respectfully,

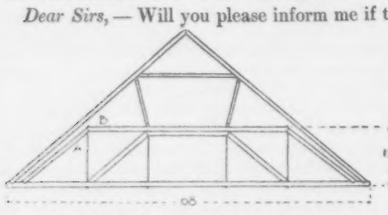
E. S. Jenison, *Architect.*

[To the first of our correspondent's "reasons" we will say that the Detroit design *may* be "superior to many of the post-offices in the country," and yet for all that be a most lamentably inferior work. In reply to the second, we will quote what Mr. Bell, as reported by the Detroit *Evening Journal*, himself says of the design: "What style of architecture," asks the reporter, in his simplicity, "do you call the building?" "Cosmopolitan or American, if you please," replies Mr. Bell. "I have endeavored to combine the serene dignity of Greek architecture with the Gothic, at the same time applying the vigorous lines of the English, the artistic feeling and grace of the French, the refinement of the Italian, and the systematic adaptation of the German schools." In the face of this statement it seems impossible to offer our correspondent a satisfactory criticism until it is explained how this difficult programme is satisfied by the resultant design. We confess to being puzzled whether to perceive in the pepper-castor top which crowns the building, an example of "Greek serenity" or of "Italian refinement." The inserted columbiads, crowned by conical shells evidently too large for the bore of the ordnance supporting them, being suggestive of force, may be taken as some of the "vigorous lines of the English." The irregular and lop-sided arcuation, more suggestive of the progress of a wounded canker-worm than anything, may be an "adaptation of the German schools," while "French grace" to season the dish to the taste can possibly be discovered in different parts of the design. If a "fair majority" of the architects will say that this design is *good*, we will give up the necessary space in our columns to publishing their names, and a confession that we and the supporters of our opinion, if we have any, are an unfair minority. — Eds. American Architect.]

A ROOF TRUSS.

To the Editors of the American Architect: —

Dear Sirs, — Will you please inform me if this sketch of truss and roof framing represents a good and safe method of trussing, and also will you explain how much must be depended on in regard to the strength obtained at joints by the butting together of the wooden members A and B providing there is a washer and nut for iron rod to pass through, and greatly oblige



Constant Reader.

[The sketch shows a tolerably safe and strong truss, if the members are large enough for their work; but equal strength might be obtained with less material, in a somewhat different form. The butting together of the timbers A and B we should not consider a proper framing. A strong iron strap should be put on each side of the joint, and bolted through. — Eds. American Architect.]

NOTES AND CLIPPINGS

A Costly Tomb. — The late Baron du Menil of Brussels left, as he supposed, a fortune of only a few thousand dollars, and directed that, after paying some small legacies, all the remainder should be spent on his tomb. It has since been discovered that, unknowingly, he had a fortune of more than $600,000, and the courts have been asked to decide whether all that must be spent on a mausoleum. — *Exchange.*

Practical Method of thawing Earth. — It is often necessary to make excavations for pipes in very cold weather, under which conditions the operation is difficult. The trouble due to frost can only be remedied by thawing out the surface. The *Elettricita* says that quicklime has been tried with success. The surface where the excavation is to begin is covered with alternate layers of lime and snow. The lime becomes slaked, and heats the soil so effectually that, after ten or fifteen hours it can be dug up with the greatest ease, even where the cold is excessive. It goes without saying that where there is no snow, water can be used. This makes the process a little more complicated, but it is just as efficacious. As in the generality of cases urgency exists, the digging up of pipes being necessitated by some case of repairs, this method is restricted in its application to those cases in which the delay of a day or a night is not inadmissible. — *Scientific American.*

TRADE SURVEYS

The fact that building operations in New York, Philadelphia, Pittsburgh, Chicago, and three or four other cities in the far Northwest, to say nothing of cities in the South, show an increase of from 25 to 30 per cent, in estimated amounts to be invested, so far this year, over last, is the strongest argument that could be adduced to show that the present industrial situation is healthy. The trade statistics in many other branches exhibit a fair increase. In New York City the volume invested so far this year is about double the amount given for the same time in 1885. In Philadelphia the increase in building activity as compared to two years ago is between 60 and 70 per cent. In Pittsburgh it is double. In Chicago it is over 50 per cent. In Minneapolis, St. Paul, Omaha, and in some of the smaller rising towns of the Northwest, comparisons can be made only in the multiples. The same is true of some Southern cities and towns. The activity which, for some years past, has been largely confined to the larger cities is now extending to the smaller towns throughout the interior. Many of the architects of larger practice, especially in the West, have, within the past thirty days, closed contracts for a great deal of small house-building work in the smaller towns. This is particularly true in Indiana, Illinois and Iowa. A great deal of small house-work is about being undertaken in Michigan and Wisconsin. Missouri is also feeling a fair share of the activity, and so is Kentucky. In spots in the South real-estate speculation is leading the way for a great deal of building activity which is sure to follow. Much more property has been purchased at high prices in the South and West than can be profitably built upon or disposed of at an early day. Prominent real-estate authorities interested in the increasing activity in real estate think that the improvement is legitimate, and will hold, and is simply the levelling-up process which they now profess to have forseen for some time. They argue that the practical absorption of the desirable agricultural lands of the West by railroad companies, syndicates, and individual purchasers is the cause, in a great measure, of the present general improvement of land outside of these interests. Be this as it may, it appears that an improving tendency has set in which will enable tax assessors to mark up the value of the real estate of the country. It is true that agricultural territory is in growing demand where agricultural products can find a near market. A great deal of agricultural territory is still comparatively valueless because of remoteness from markets, but at the same time these lands are now under inquiry, or observation, by prospective purchasers, who contemplate extensive operations for speculative purposes in the future. The price of bread-stuffs does not encourage the expansion of the agricultural area as much or as rapidly as real-estate speculators or operators would be glad to see. Yet a great deal of heavy land buying is being quietly done, and it is done in view of what the buyers believe will be a general appreciation of real estate. These operators believe that there are many influences at work to lift the price of land onto a permanently higher basis. Among these influences may be mentioned the cobwebbing of the country by railroad tracks, the increase in immigration, made up largely as it is of farming labor; the increase in the volume of circulating medium which, according to the latest treasury report amounts to some $68,000,000 since July 1. The increasing tendency of population in the Eastern sections of the United States to find Southern and Western opportunities, and finally the general increase in manufacturing activity and in the enlarging consumptive requirements of the whole people. In other words, the land speculators recognize that the era of cheap land is about over, and that we are entering upon, or soon will enter upon an era of advancing real estate values which will make property a far more valuable article of merchandise than the products of timber or iron ore. The views entertained by so many who have recently been giving quiet expression to them may be somewhat chimerical, and it may be possible that the available agricultural territory is sufficiently extensive to provide for the actual necessities of the new comers for years to come, but the speculators think otherwise, and they are taking time by the forelock, making heavy purchases, not only of mineral and timbered territory, but of agricultural territory as well. They are buying up at low prices to hold for the incoming and oncoming millions, and will charge them a liberal margin for their stewardship.

In the lumber trade values are higher than last year, and the actual demand for consumption in the country at large is fully as large. Taking this in connection with the shortage, which is not denied, manufacturers and dealers are quietly edging prices up a little, among small buyers particularly. Demand for lumber in all the leading markets along the Atlantic coast is quite active. Complaints over interstate freight-rates are disappearing.

The receipts of yellow-pine, spruce, hemlock, and of all kinds of hardwood have been increasing under the improving demand for building requirements. Oak, plain and quartered, cherry, mahogany, and walnut, are all in better demand than a week or two ago, on account of the probability entertained by many of an actual scarcity later in the season. The supply of brick will be abundantly large, and all the new machinery that has been set since last season has had its season's capacity sold. The brick manufacturers have avoided or settled strikes. And while the cost of brick-making is slightly greater in several cities this year than last, the manufacturers expect to equalize on some of the finer qualities. Ample preparations have been made for an increased output of stone in all the leading desirable qualities. The latest reports from marble and granite sources indicate that some of the heaviest contracts placed for years have been recently secured. The stocks of slate are light, but the quarries are working full time, and there will be no delay in filling all contracts made. The iron and steel makers are profiting by a little dulness. The furnace capacity is running to its utmost limits. Perhaps 25 per cent of the bar-iron capacity will be in need of business before the close of this month. Nails are selling in Eastern markets at $2.10 to $2.25. The demand for steel nails is growing. All kinds of steel are in very heavy demand to meet the requirements by the new shop capacity, which has been forced into existence by the heavier demands of the past year or two.

American bessemer has declined as much as $1, and a good many brands of forge and foundry iron have dropped as much. Bar-iron is holding its own. Plate, skelp, and tank, and all kinds of rolled steel are firm in price, as competition has already done its best. There is nothing new in steel rails. No fresh orders have been given for foreign material. English markets are still strong under the heavy American and Colonial demand, and the improvement will last that market for some time to come. At this time the anthracite-coal managers are awaiting the developments of the threatened strike, there are over 1,000,000 tons of anthracite above ground, and the producers say, privately, they are able to endure a six weeks' or two months' strike without loss, in fact, to their advantage. The buying-interests both East and West, have been holding back, as usual, anticipating a break in prices. A strike will be worth several million dollars to the anthracite producers. The bituminous-coal interests are now booking their orders as fast as they can be entered, and in a week or two the season's production will be practically sold. It is very safe to say that at no time has the demand for machinery and motive power been as great as at present. The car-works, spike-works, bridge-works, locomotive-works, and the manufacturers of engine and boiler capacity have booked a great deal of business since May 1, and the daily inquiries which are arriving go far to show that the demand will be a continuous one throughout the summer. The agricultural demand for small stationary engines is quite a feature. Machinery for machine-shops is in demand to the full extent of machinery-making capacity. The best-known machinery-makers in the country are full of work, which will last from one month to four. Agents who are soliciting orders, state that the competition is very close, and that there is a race between the manufacturers of machinery to secure the best shop and mill appliances, so that they can do better and cheaper work than others. One of two orders were given out recently for the projected cotton-seed oil-mills in the South. Sixteen are to be built by one company, eight this year and eight next. The demand for machinery has stimulated a number of new enterprises which will take root, some of them in the dangerous ground of the South, and some in the risky locations of the West. The railroad companies in both sections are intending to pursue a policy of supplying their own requirements as far as possible, and some of the new rolling-mills projected, and many of the new industrial establishments heard about are projected and supported by the enterprise of prominent stock-holders in the railroads which will be the best customers of the new concerns.